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ABSTRACT

Nongradedness is a type of internal organization for a school that groups students on the basis of an intergrade plane. This approach attempts to adapt instruction to individual differences. Grouping principles include physical factors, social maturity and personality factors, mental maturity, academic status, and teacher personality within the teacher-pupil relationship. A comparative evaluation of a nongraded school organization was made within a specific elementary school district in Austin, Texas. Grades one through six were studied. The six major hypotheses tested were that there are important differences and similarities between experimental (nongraded) and control (graded) classes in (1) the distribution of teachers' instructional time; (2) the scope of instructional resources used in reading, spelling, and arithmetic; (3) the formation, number, size, and achievement range of subgroups; (4) pupils' use of the centralized library; (5) children's school anxiety; and (6) children's achievement. The results were mixed although the data related to the fifth hypothesis did not verify the expectation of less anxiety. Instead, anxiety seems to increase over the school year in the nongraded program. (LN)

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BUREAU OF LABORATORY SCHOOLS MONOGRAPH NO. 21

NONGRADEDNESS:

An Elementary School Evaluation

BY HENRY J. OTTO

with the assistance of
THE CASIS SCHOOL FACULTY

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CONTENTS

Preface v

CHAPTER 1

Nongradedness in Perspective 1
Nongradedness Is Not New 2
Nongradedness vs. Conventional Programs 3
Bibliography 4

CHAPTER 2

The Research and Its Setting 10
The Research Setting 10
Controlled Variables 18
Uncontrolled Variables 21
The Research Plan 24
Theory and Hypotheses 26

CHAPTER 3

Instructional Practices 29
The Hypotheses 29
Comparability of Class Sections 30
Data Collection 31
Time for Instruction 32
The Use of Instructional Materials 36
Library Usage 41

CHAPTER 4

Grouping Practices 45
The Number and Flexibility of
Subgroup Arrangements 50
The Size of Subgroups and the
Achievement Ranges Within Them 56
Pupil Mobility Among Groups 58

CHAPTER 5

Teachers' Descriptions of Their Programs 61
A Third Grade Self-Contained Class 61

A Typical Day in November . . . 63
A Teacher's Program—Nongraded Component I . . . 65
A Self-Contained Fourth Grade . . . 71
General Program Features . . . 72
A Typical Day in November . . . 75
Modifications in the Overall Fourth Grade Program During the Year 1967–1968 . . . 78
A Fifth Grade Self-Contained Class . . . 79
A Teacher's Program—Nongraded Component II . . . 86

Chapter 6

Anxiety in Nongraded and Graded Classes . . . 94
Theoretical Rationale . . . 94
Learning Theory . . . 96
Trait-State Theory . . . 96
Measuring Anxiety . . . 97
Methods and Results . . . 99
Discussion . . . 105

Chapter 7

Achievement in Graded and Nongraded Classes . . . 107
Analysis of the Metropolitan Achievement Test Results . . . 108
Basic Skills Results . . . 114

Chapter 8

Summary and Issues . . . 119
Tabular Summary . . . 119
Other Research . . . 121
The Glen R. Johnson Study . . . 123
The Dayton N. Ward Study . . . 124
What Does the Research Say? . . . 125
Whither Nongradedness? . . . 127

PREFACE

The research reported in this monograph was planned and directed by the senior author. At an early stage in the planning Dr. Beeman N. Phillips, a professor of Educational Psychology, was invited to supervise the administration of The Children's School Questionnaire and to use the data thus gathered to prepare the chapter dealing with children's school anxiety. He invited Mr. Gail E. Chandler to assist him with the project and Mr. Chandler analysed the first two years' findings as his dissertation. Dr. Benjamin Fruchter likewise was invited at an early date to supervise the statistical analysis of the achievement data and to prepare the chapter which carries his name. The writer also invited Mr. Donald H. Williams to assist him with the gathering of the information about instructional practices which he used for his dissertation. This monograph, then, is a summary of all that went into the project as well as the contributions of many persons.

No research can be done in a school without the active support and assistance of the principal and teachers. The principals who facilitated this project were Dr. M. G. Bowden (1965–6), Mr. John Glenn (1966–7), and Dr. Lester C. Howard (1967–9). The teachers who assisted in the project are listed below:

Mrs. Bonita Anders	1965–66	Miss Willie Long	1965–69
Mrs. Mary Alice Anderson	1965–68	Mrs. Phyllis McDaniel	1965–67
Mrs. Marilyn Bauman	1965–66	Mrs. Margaret McGuire	1965–69
Mrs. Betty Brittain		Miss Patti Mattingly	1965–67
(Betty Blazersen)	1965–68	Mrs. Betty Meyers	1966–68
Mrs. Mary Caldwell	1967–68	Mrs. Mayme Mikeska	1965–69
Mrs. Bedonna Carstarphen	1965–69	Mrs. Constance Nasserian	1967–68
Mrs. Carolyn Chandler	1967–68	Miss Frances Osborne	1966–69
Mrs. Patricia Cooley	1966–68	Mrs. Orlandis Reves	1965–66
Miss Geneva Corder	1965–69	Mr. Tom Rowland	1965–66
Mrs. Mary Ann Edwards	1965–69	Mrs. Dianne Shields	1968–69
Mrs. Margie Hartson	1965–69	Mrs. Marbeth Sloan	1965–69
Miss Eleanor Head	1965–69	Mrs. Emily Stafford	1965–69
Mrs. Mallissie Hurt	1965–69	Mrs. Helen Vodicke	1967–68
Mrs. Martha Ingerson	1965–68	Miss Oleta Wallace	1965–69

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Publication Revolving Fund. Mention should be made of the six academic assistants in the Department of Educational Administration who administered the Children's School Questionnaire each year.

To all who assisted in the project with time or funds the authors are deeply indebted and grateful.

HENRY J. OTTO
Project Director

CHAPTER I

NONGRADEDNESS IN PERSPECTIVE

HENRY J. OTTO

Like many other terms in education, nongradedness has acquired so many different meanings that discourse becomes difficult. Some writers state that nongradedness designates any arrangement or any procedure which attempts to adapt instruction to individual differences so that each pupil can progress at his own rate as far forward or afield as his ability and interests permit.[1] Other writers are more explicit and maintain that nongradedness refers to the vertical feature of school organization in which instructional groups in each of the major curriculum areas are organized on an interage, intergrade basis to facilitate group procedures for meeting individual differences.[2]

To assist the reader in keeping a specific definition of nongradedness in mind as he peruses the remainder of this monograph, the authors provide the following definition of nongradedness: *Nongradedness is a facet of the internal organization of a school, a vertical facet, wherein instructional groups are organized on an intergrade basis in one or more curriculum areas in accordance with pupils' developmental needs.* The crux of the definition is *intergrade* grouping for instruction. Nongradedness is not a synonym for intraclass grouping, intersection grouping at the same grade level, special classes for academically talented or retarded pupils, special interest groups, or multitudinous other procedures for adapting instruction to individual differences. Some practices, such as special classes or special interest groups, may contain pupils from two or more contiguous grades, but such practices do not provide a basic involvement of the main stream of pupils or deal with the basic core of the curriculum. The fact that such practices cannot meet the criteria of nongradedness should not disparage their use.

Nongradedness is an empty shibboleth unless it is accompanied with extensive procedures for adapting instruction to individual differences. In fact, the advocates of nongradedness base their main argument on the thesis that nongradedness is a most useful *additional* vehicle for adapting instruction to the developmental needs of pupils. Genuine nongradedness, as implied by the above definition, especially if it is applied to all or most of the curriculum areas, forces a revision of such other facets of internal organization as policies and practices in grouping pupils, promotion policies and practices, marking and reporting to parents, the use of basal texts and other instructional resources, and the basic philosophy undergirding the program of the elementary school. It is through the latter accompaniments of nongrading that its advocates hope to achieve improved mental health of pupils and consistent forward progress of all pupils. Nongradedness, therefore, is an administrative and organizational device for achieving a school for children, organized and operated around and in terms of the best that is known about children's development and how the school can best foster that development for each child.

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[1] John L. Tewksbury, *Nongrading in the Elementary School.* Columbus, Ohio: Charles E. Merrill Books, Inc., 1967, Chap. 3.

[2] John I Goodlad and Robert H. Anderson, *The Nongraded Elementary School.* New York: Harcourt, Brace, and World, Revised Edition, 1963.

NONGRADEDNESS IS NOT NEW

Some individuals not familiar with the history of elementary education in the United States think nongradedness is a brand new idea. The notion of newness has been encouraged by the titles of recent books and articles.[3] The dame schools of the colonial era, the reading and writing schools which flourished between 1650 and 1825, and the Lancastrian schools (1806–1830) contained features of nongradedness. More recent innovations in elementary school organization designed to enhance provisions for individual differences are represented by Pueblo Plan (1888), the Cambridge Plan (1893), the Portland Plan (1897), the Batavia Plan (1898), the Santa Barbara Plan (1898), the Dalton Plan (1919), and the Winnetka Plan (1919). Although the above plans were innovations for adapting instruction to individual differences, they were not fundamental nongraded programs. The essence of nongradedness began to appear in The Flexible Progress Group System in Western Springs, Illinois, in 1934 and in the ungraded primary units started in Milwaukee in 1942. Some sources show that a nongraded junior primary unit was started in Richmond, Virginia, in 1936 and in Athens, Georgia, in 1939.

The movement toward nongraded programs spread slowly in the United States until it was given new impetus by Goodlad and Anderson as their book on *The Nongraded Elementary School* was first published in 1959. Since then there has been much interest in nongradedness in elementary schools and a little interest in secondary schools. It is almost impossible to find out how many school systems have nongraded programs at any level because of the multiple definitions attached to nongradedness. To assist the interested reader who wishes to make a thorough historical study of this problem, the authors have provided an extensive bibliography at the end of this chapter.

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[3] David W. Beggs, III, and Edward G. Buffie, *Nongraded Schools in Action: Bold New Venture*. Bloomington, Indiana: Indiana University Press, 1967.

NONGRADEDNESS VS. CONVENTIONAL PROGRAMS

Comparison of nongraded programs with today's programs in so-called graded schools is fraught with difficulties because nongradedness has been given so many definitions and because nowhere is there available an accurate, comprehensive description of the nature of programs in graded schools. No doubt the variation in graded school programs is as extensive as the interpretations of nongradedness. The typical method of approaching such a comparison is to assume that all graded schools represent the horrible "Procrustean Bed" or "Procrustean Standards" described by Goodlad and Anderson.[4] But the majority of today's better elementary schools are not the child punishment centers implied by the Procrustean model.

The past three or four decades have seen much concern for children's mental health, wholesome personality development, intra-class grouping, enrichment for academically talented pupils, special classes of many types, remedial help for underachievers and pupils with special learning difficulties, special interest groups, and progress from grade to grade based more extensively on all-round maturity. Secondary schools have developed differentiated offerings to accommodate students with wide variations in achievement. All of these developments put together have decreased the nonpromotion rates in elementary schools and probably increased pupil variation in each of the grades. This does not mean that even today's best elementary graded schools are perfect but it seems illogical to assume that most graded elementary schools today are true examples of the Procrustean model.

Research studies published prior to 1968 in which efforts were made to evaluate nongraded programs in elementary schools do not provide much help The findings of these studies are inconsistent and conflicting. The hurried efforts at evaluation produced faulty research designs in some instances. Many studies were of short duration, one year or less. The findings of most studies were jeopardized by an excessive number of uncontrolled variables. In only a few instances did the published account provide any description of grouping and instructional practices in either the experimental or control classes. Not much light is thrown on the experiment if control classes are described merely as "conventional graded classes."

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[4] Goodlad and Anderson, *op. cit.*, Chap. 1.

The study reported in this monograph has endeavored to keep uncontrolled variables at a minimum and a special effort was made to describe grouping and instructional practices in experimental (nongraded) and control (graded) classes. The research design and its setting are presented in the next chapter.

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CHAPTER II

THE RESEARCH PLAN AND ITS SETTING

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The study reported in this monograph was conducted in the Casis and Dill elementary schools in Austin, Texas. These two schools serve a single attendance zone and are under the direction of one principal. The Dill school is a primary school housing two sections of each of the first, second, and third grades. The Casis school also houses some sections in these same grades. All children in grades four, five, and six in this attendance zone attended the Casis school. In the two schools together there are five sections at each grade level. The only way in which the Dill school was involved in the research was the use of the two Dill third grade teachers as part of the control groups. The two schools draw pupils from the same patron population. Since the Dill school had only a minimum involvement in the research, the narrative from here on will identify only the Casis school.

THE RESEARCH SETTING

The research reported in this monograph was conducted in the Casis Elementary School in Austin, Texas, with two third grade control sections in the Dill school. The Casis School is an Austin public school affiliated with The University of Texas as a special center for research and demonstration in elementary education. As an Austin public school it serves all the children in a designated attendance area. In addition to serving all the so-called typical children the school has physical facilities for teaching children who fall under the category of "special education." Severely involved special education cases from the entire city are transported to the Casis School. In 1967–68 the special education children, classified according to each one's major disability, numbered as follows: hearing loss, 19; sight deficiencies, 13; neurologically involved, 15; orthopedic, 28; and speech, 12. Of these 87 pupils only 32 had full-time placement in special education classes (23 with orthopedic problems and 9 of the neurologically involved); the other 55 spent most of their time in regular classrooms, with only varying numbers of periods per day or week scheduled for special therapy. Those who spend most of their time in regular classrooms are scattered throughout the six grades; in 1967–68 the largest numbers had regular class placement in grades one, three, and five; another year the distribution may be different.

The state of Texas does not provide state aid for children under six years of age; hence only the wealthier districts provide free public school kindergartens out of local funds. Austin does not have public school kindergartens but the Casis School operates two sections on a self-supporting tuition basis as a teacher education laboratory for The University of Texas. In addition to the kindergartens the Casis School, in 1967–68 had the following sections and enrollments in the grades: grade 1, 2 sections, 61 pupils; grade 2, 3 sections, 65 pupils; grade 3, 3 sections, 85 pupils; grade 4, 5 sections, 123 pupils; grade 5, 5 sections, 139 pupils; and grade 6, 5 sections, 155 pupils. The total membership, including kindergarten and the 32 pupils enrolled full-time in special education, was 706 in 1967–68. A nearby primary school, under the supervision of the same principal, houses two sections of each of the first three grades. Theoretically such a two-building arrangement may sound plausible but in practice it creates many administrative headaches. In this situation in particular it reduces the number of sections in each of the primary grades and thus overloads the primary grades in the Casis School with special education children whose major placement is in regular classes. A severely involved special education pupil who can and should have his major placement in a regular class does require more teacher time and attention than a child who does not have physical limitations. The needs of a special education pupil can be served best in a regular classroom if the number of such cases does not exceed three or four. In calculating class size, each special education pupil in a regular class should be counted as the equivalent of two typical pupils. Over the years the Casis School has made persistent effort to adjust the size of classes in such a way as to give each teacher appropriate pupil-load credit in proportion to the number of special education cases in her class; in general these efforts have been successful but there have also been notable exceptions. The exceptions have been most prevalent in the primary grades due to the fact that nearly half of the primary grade sections are in the nearby school to which the special education pupils cannot be assigned; the special therapy facilities and staff are at the Casis School.

The special education pupils whose major placement is in regular classes are sectionized in grades with agemates as much as possible. Most special education pupils manifest varying degrees of academic retardation but they are classified according to the same principles as those governing the grouping of other children, as described in a later section. Meeting the individual academic needs of special education cases is no different from meeting the individual differences of other children.

Principles for Grouping. Sectionizing children into conveniently sized classes throughout the school is based on certain general and specific principles.

A. Several principles to be considered at all grade levels.

1. The plan of grouping children should provide for harmonious adjustment of the child in all phases of his development.
2. The plan should provide for the grouping of children with sufficient differences to insure group complexity. The children should be enough alike, however, to have similar needs and to be able to work together harmoniously.
3. Instead of promulgating the idea that the child is in a "low ability" or "high ability" group, the plan of grouping should encourage the conception that the child is in the group in which he can work best, the group most individually challenging and satisfying to him, and the one to which he can make the most worthwhile contribution.
4. The plan of grouping should provide opportunities for the child to learn to live with mutual satisfaction with his neighbors.
5. The plan of grouping should insure the child's development of a wholesome personality in order that he may live happily with himself.
6. The plan of grouping should facilitate a normal amount of success on the part of every child; it should provide opportunity for each child to succeed in terms of his own abilities without unfavorable comparison with others.
7. The plan of grouping should place a child in a group with children of similar chronological age, physical development, and social maturity, but occasional opportunities should make it possible for each child to work with children older and younger than himself.
8. The plan of grouping should provide for the best development of academic progress and mental acumen in each child.
9. The plan of grouping should be such as to promote and facilitate the teacher's knowing intimately all the children she teaches.
10. The plan of grouping should be flexible and adjustible, and should allow for individual changes when needed. Boundaries between groups should be overlapping and not rigidly fixed.
11. At all times each child should find himself in a class group in which he has opportunities to excel, to be excelled, to be a leader, and to be a follower. Group situations and activities from day to day and week to week should provide a balanced interplay of leading and following. Excesses of any one role provide an unwholesome environment for desirable character, personality, and social development.
12. The basic criterion in placing a child into a given section is the *achievable role of the individual in relationship to the group.*

B. Specific considerations: These differ somewhat by grade level in the aspects of development which are examined but the specifics at all grade levels fall into the following categories:

1. Physical factors.
2. Social maturity and personality factors.

3. Mental maturity and special liabilities.
4. Academic status and special abilities or limitations.
5. Teacher personality and teacher-pupil relations.

Cumulative records. A plan such as that followed in the Casis School requires that certain types of data be gathered regularly on all pupils. Certain records, such as census and registration, have only "current year" usage value. The number and variety of these in the Casis School would be similar to those used in most school systems. The cumulative record is the same as the one used throughout the Austin system and makes provision for a twelve-grade record; it transfers with the student as he moves into junior and senior high school. This cumulative record consists of a heavy-duty folder and three 8½″ by 11″ cards printed on both sides. The folder has spaces for the child's name, location in school, schools attended, a record of special services, and then serves as a "holder" for the three cards. Card One makes provision for identifying data, addresses, photographs, parents' occupation, siblings, other pertinent information about the family, important behavior characteristics, important special school and out-of-school experiences, and postschool plans. Card Two serves as a record of all mental, achievement, and special tests taken by the child, and term-end grade placement data. Card Three contains height, weight, vision and hearing test data, and any other health information gathered by or made available to the school. The folder and its three cards are stored in the classrooms. Each teacher has a steel file which can be locked; the folders are considered as confidential but are available to teachers upon as convenient a basis as possible. Each teacher is responsible for keeping her set of folders up to date.

In order to collect a gradually expanding body of information concerning the child's maturation and progress certain measures are taken regularly at six-month intervals. These are height, weight, and achievement in all the areas appropriate for the different grade levels. A reading readiness test is administered at the beginning of the first grade. Standardized tests are given at the end of the first grade and in October and April in second and third grades. A comprehensive standardized achievement test is given in October and April of each year in grades 4–6. Group mental tests are given in grades 2 and 5 and to all transfers-in each year. In a small percentage of cases the group mental test is followed by an individual test. Raw scores, developmental ages, and grade equivalents are recorded for all the measures for which conversion tables are available. The graph on the cumulative record card is expanded at six-month intervals to portray a visual perspective of the unfolding growth pattern of the individual. For those who do not attend kindergarten the information about the family is obtained by first grade teachers who visit in each first grader's home during the first six weeks of the school year; first grade classes meet during forenoons only during this period to allow the teacher time for home visits. In other grades home visits are made upon an individual need basis or upon invitation from the parents.

In addition to the confidential cumulative folder, each teacher keeps two other folders for each pupil. One of these is used to assemble samples of the child's work during the year. Children are encouraged to assist the teacher in placing samples into this folder. The other folder is used for storage of samples of the child's work from the two preceding years. The samples in both of these folders are used in the teacher-parent conferences to assist the parent in visualizing development over time.

Progress through the grades. The Casis School operates according to a plan of continuous grouping. Changes in section or grade placement are made at any time during the year when they would seem to be in the best interests of the child. As in most schools, children of the same age grow up enough alike so that the great majority move along with their agemates. The number of reassignments during the year is not large; the school is not in a continuous reshuffle due to a continuous best placement policy. Class sections for the ensuing year are planned before the end of the current year so that individual adjustments in section assignments can be made while the teachers' familiarity with individual cases is greatest. Chronological age is only one factor in placement. Each grade level permits a reasonable range in chronological age so that unusually mature or immature pupils can be accommodated without embarrassment to pupils or parents. The policy of continuous best placement for each pupil results in the fact that each year from three to seven pupils are placed with a younger on-coming group and a few are placed with an older group. Technically such changes are called nonpromotions and accelerations. The essential point is that a continuous best placement program makes provision for interage placement; it is not a scheme which calls for 100 percent promotion from grade to grade. In a grade-progress study such cases would be recorded as having experienced retarded or accelerated progress.

In essence the resulting practices in the Casis School are not radically different from practices in hundreds of other schools in which nonpromotions and accelerations are held to a low figure. The Casis School does differ from most other schools in that a comparative marking system has not been used for seventeen years, that teacher-parent conferences constitute the heart of the reporting plan, that teachers have not used the threat of failure for seventeen years, and that pupil motivation is based on intrinsic rather than extrinsic values. The usual worries about promotion have disappeared from the scene since the emphasis throughout is upon the optimum development of the individual in a school setting most conducive to that end. The reader may wonder about children's achievement in an environment devoid of a comparative marking system and the threat of failure. Standardized achievement test results have been gathered each year for seventeen years. On several occasions year to year comparisons have been made as well as comparisons with test results in other Austin schools in comparable neighborhoods and with national norms. Such comparisons are always hazardous and contain many pitfalls but, for what they are worth, they have shown that Casis School scores compare favorably, grade for grade, with scores obtained on the same tests at the same time in other schools. The comparisons also showed that the average achievement of pupils in Casis School has been rising gradually over the years.

The equalization of educational opportunity theory of pupil progress and a policy of continuous best placement in an elementary school must be accompanied with policies and program provisions in secondary schools so that all children can have their educational needs met at the secondary school levels. Actually grouping and promotion policies and practices cannot work well unless they represent a twelve-grade program. The Casis School is fortunate to be in a school system in which extensive provisions for individual differences are made in the secondary school units.

Reporting to parents. At the Casis School the plan of reporting children's development to parents is envisioned as the most important element in a broad school-patron relations program. Therefore the reporting plan has many elements which operate during the year. In September all first grade sections have morning sessions only for the first five weeks; teachers are expected to use afternoons for visits to the homes of first graders. During these visits a personal acquaintance is established between teacher and parent and the teacher obtains essential family data which are entered into the child's permanent folder. Also during September the PTA sponsors an initial meeting with parents by homerooms. The meetings for the various grade levels are scheduled on different nights, so that parents who have more than one child attending this school can attend two or more of the meetings. The purpose of these meetings is essentially threefold: (1) to enable parents to become acquainted with the teacher early in the school year; (2) to give the teacher a chance to provide parents with a total view of the year's program in that room, to familiarize parents with the textbooks and other resources available for teaching, and to explain school policies relating to children's care of books, lunch program, traffic regulations, and similar items; and (3) to explain the school's reporting plan. Usually at least 95 percent of the homes are represented at these meetings.

The third and fourth elements of the reporting plan operate conjointly. The heart of the reporting plan consists of at least two individual teacher-parent conferences per year, one between October 15 and December 15 and the other between March 15 and May 15. Additional conferences are held if requested by teacher or parent. Each conference lasts at least thirty minutes. Some are held during school hours but most of them are scheduled after school closes at 3:15 p.m. Prior to each conference the parents are invited to spend the forenoon or the afternoon observing in the classroom. The parents are invited to have lunch at school with the child's class; usually they accept this invitation. Such an arrangement helps parents to ignore children's usual complaints about school lunches. Although both parents are always invited, usually it is only the mother who can come for the visit and the conference. Over the years about 99 percent of the parents have come each time for the visit and the conference. Each teacher initiates the date with the parent, specifying a specific day and time. This procedure enables the teacher to distribute the conferences over a period of eight weeks and to make early arrangements with the parents whom she is most eager to see. In advance of the observational visit the parent is sent a one-page sheet containing "Suggestions for Making Classroom Visitation Most Desirable."

Prior to the fall series of conferences the faculty arranges an in-service session for teachers new to the school as well as others who wish to participate. The in-service meeting deals with all aspects of conducting conferences with parents; it usually concludes with a "live" demonstration in which one of the experienced teachers holds a conference between herself and the mother of one of her pupils. In all the conferences with parents the teacher is expected to cover any health factors which are pertinent, emotional development, social and citizenship development, all areas of the school program, and special interests or weaknesses. The teacher is also to elicit helpful information from the parent and to plan with him or her ways whereby home and school can work together in the interest of the child. To assist parents in obtaining a realistic picture of the child's current status the parent is shown the texts used in school and samples of the child's work. The parent can visualize the child's development over a period of time by comparing samples of the child's work this year with the samples from the two preceding years and by comparing the difficulty of texts used this year with the difficulty of texts used successfully by the child in the two preceding years. The Iowa Test of Basic Skills is administered early in April each year and the accompanying percentile profile chart is used in the conferences to provide the parent with the comparative information which nearly all request. The parent receives a copy of the profile chart to take home.

The fifth component of the reporting plan consists of a report card sent home with the child at the end of each nine weeks, signed by the parent, and returned by the child. It is a checklist type of form similar to those used in many school systems. The headings consist of the various curriculum areas, work habits, personal development, and school citizenship. Opposite the headings are four columns labeled Excellent, Satisfactory, Unsatisfactory, and Needs to Improve. Teachers are advised not to use the Unsatisfactory column; if the child's work is not in accordance with capacity the matter had better be discussed in a conference with the parent. Teachers merely place a check (✓) in the appropriate space after each heading. It is possible for an item to be checked Satisfactory as well as Needs to Improve. This whole section of the card is preceded by a carefully worded statement to the effect that each child's ratings are based upon the school's best estimate of the child's ability and maturity. The report card does not provide any comparative information.

The sixth element in the reporting plan consists of a variety of devices which teachers use at different times. The school bulletin summarizes these as follows:

1. First-grade teachers in their initial meetings with parents often encourage them to ask the child leading questions about school which will help them as parents to gain a better comprehension about school. Such questions as "What did you talk about in social studies?", etc.
2. Many teachers summarize the activities of the day just at its close, so that learnings are reviewed and pulled together just before the child leaves and goes home. This gives the child a summary as a part of his learning activities and also helps him to give his mother and dad a better picture.
3. Some teachers have found that it is profitable to ask children to write summaries of their learnings in a unit or problem and send it home to their parents as a part of their language arts activities. This is particularly beneficial if the teacher uses the experiences as learning and teaching activities.
4. Other teachers ask their children to prepare self-evaluation sheets and suggest that they take them home as a report at various times during the year. Often children evaluate themselves quite low on such a device and the school may need to prepare parents for a shock in certain cases. It is a fairly good device for stimulating children to evaluate themselves critically.
5. Samples of work when taken home are real and effective means of reporting. Sometimes these reports are not complimentary to the school. Sometimes unfinished and poorly spelled work gives the parents the impression

that children are not taught spelling or some other subject in the curriculum. Work sent home should be completed and checked by the pupil and the teacher.

6. Assignments and special home projects constitute a real and vital part of this reporting picture. Live, interesting school work enlists pupil activity outside of school, and what is produced outside the school should find expression inside the classroom.
7. The Newsletter, published regularly by the office is another reporting medium. This paper is read by many parents and the attitudes and news it carries will have some effect upon the thinking of the general public.
8. There are other things, too, which are important. The class newspapers, class parties, and open houses sponsored by the school affect parent morale and interest in the school.
9. One of the best ways to familiarize parents with the school's program is to use parents as resource persons in the instructional activities. Each teacher is urged to use parents in any way whenever parents have a genuine contribution to make.

Patrons and pupils. The Casis school is located in a neighborhood consisting almost entirely of individual homes occupied by university professors, physicians, dentists, lawyers, owners and managers of businesses, salesmen, skilled tradesmen, and some unskilled workers. The percentages of fathers holding professional degrees is fairly high and a large proportion of fathers and mothers hold college degrees. It is not surprising, therefore, that the pupils who attend the Casis school reveal a skewed distribution of I.Q.'s. Over the years the I.Q. distribution of pupils has been approximately as follows: 120 and over, 42 percent; 100 to 119, 42 percent; below 100, 16 percent, with less than one percent below 80. These facts must be kept in mind as one examines the findings of this study. In 1967–68 the Casis school had a total membership in February of 759 pupils including 43 children enrolled full-time in special education; others receiving part-time instruction from special education teachers numbered 8 in hearing therapy, 8 who had vision deficiencies, 63 who received speech therapy, and 17 who were receiving physical therapy. Austin has two elementary schools with special facilities and staff for handling severely involved special education cases. Casis is one of these schools and many of the special education pupils are transported to the school. All special education pupils who are physically or emotionally able have part-time placement in regular classes. Hence each homeroom teacher has several special education pupils as part of her register.

Controlled Variables

Since experimental and control groups were housed in the same school it was possible to exercise control over many variables which are difficult to control if experimental and control groups are in different schools or in different school systems. The fact that only one school system was involved provided control over systemwide policies, availability and use of central staff consultants, annual per-pupil expenditure including overall costs and fund allocations for library, books and instructional supplies and equipment, and teacher-pupil ratio as well as the allocation of special teachers and secretarial services. Curriculum guides and recommended time allotments were the same in Casis school as in other Austin schools.

The fact that experimental and control groups were in the same school provided control over (a) the same principal and whatever thrust and influence he exercises over the total program, (b) teachers with comparable preparation and experience, working in the same organizational structure and climate, (c) the same learning resources (library, textbooks, audiovisual aids and equipment, classroom size and equipment, etc.), (d) the same special teachers (librarian, music, art, and student teacher assignments), (e) the same neighborhood, parent clientele, school-patron relations, (f) the same curriculum guides for teachers, and (g) the same provisions and emphasis upon cooperative planning by teachers. In the latter connection it should be stated that official time is scheduled from 3:30 to 4:30 p.m. each Monday for general faculty meetings or grade-level meetings of teachers. In addition, the school dismisses at 2:00 p.m. each Wednesday, instead of the usual 3:15 dismissal hour, to provide a two hour or more planning time for teachers. Many of the Wednesday periods are used for cooperative grade-level or intergrade planning by teachers.

In assigning children to experimental and control groups the grouping policies described earlier were followed. The objective was to secure class sections as nearly comparable as possible. Tables 1 and 2 are illustrative of the 45 tables prepared to demonstrate the degree of comparability of experimental and control sections and all pupils in experimental and control groups. Five tables for each grade level, showing grade equivalent data in word knowledge, reading, spelling, arithmetic computation, and arithmetic problem solving, were prepared each fall for three consecutive years. The reader will recognize that the data were not identical from year to year. As a whole, however, data such as these led us to conclude that our experimental and control sections were sufficiently comparable so as not to jeopardize our findings.

Table 3 illustrates the tables prepared each year at each of the three grade levels to reveal comparability in intelligence. Tables 5 and 6 provide summary facts comparing all pupils in control groups with all pupils in experimental groups. The reason for the small number of pupils in the experimental group at each grade level in 1965–66 is that the nongraded program was begun that year with only three teachers representing grades 3, 4, and 5.

The illustrative data in Tables 1 through 5 show the range in individual differences by class sections and for all pupils in experimental and control groups as well as means and standard deviations. Such information is important because it reveals the degree of comparability of the complexity of the teaching task. If control groups differed appreciably from experimental groups in range or mean in intelligence or achievement teachers in control sections could logically be expected to use different procedures and materials than teachers in experimental groups. Comparability of groups is also helpful in giving support to the validity of achievement and school

TABLE 1

Grade Equivalent Data Showing Comparability of Experimental and Control Groups, Arithmetic Computation, Metropolitan Achievement Test, Elementary Battery, Form B, September, 1965, Third Grade

	Groups					
	Control					Experimental
Score	1[a]	2[b]	3[c]	4[d]	All	1[e]
High	4.8	4.3	4.1	4.1	4.8	4.8
Low	2.1	2.6	2.6	1.9	1.9	2.6
Mean	3.4	3.7	3.3	3.2	3.4	3.8
S D	.6	.4	.5	.7	.6	.5
No. of Pupils	23	27	26	22	98	22

[a] McGuire, [b] Sloan, [c] Anderson, [d] Bauman, [e] Stafford

TABLE 2

Grade Equivalent Data Showing Comparability of Experimental and Control Groups, Reading Metropolitan Achievement Test, Intermediate Battery, September, 1967, Fourth Grade

	Groups						
	Control				Experimental		
	1[a]	2[b]	3[c]	All	1[d]	2[e]	All
High	7.9	7.7	7.9	7.9	7.9	10.0	10.0
Low	2.0	2.4	3.2	2.0	1.6	3.0	1.6
Mean	5.2	5.1	5.7	5.3	5.1	5.9	5.5
S D	1.7	1.5	1.5	1.6	2.0	1.8	1.9
No. of Pupils	31	29	30	90	30	28	58

[a] Head [b] Mikeska [c] Osborne [d] Brittain [e] Chandler

anxiety comparisons made in later chapters. Actually the method used in calculating the analyses of covarience did not require equivalence of experimental and control groups but to have them as comparable as they were in this study gives these comparisons greater credence.

TABLE 3

I Q. Data Showing Comparability of Experimental and Control Groups, Fall 1965, Fourth Grade

	Groups					
	Control					Experimental
Score	1[a]	2[b]	3[c]	4[d]	All	1[e]
High	129	133	129	132	133	147
Mean	114.5	110.6	109.8	110.8	111.4	112.5
Low	89	78	75	87	75	85
S D	10.2	15.1	14.0	11.7	12.9	13.7
No. of Pupils	26	27	26	27	106	27

[a] Head [b] Mattingly [c] Mikeska [d] McDaniel [e] Balzersen

UNCONTROLLED VARIABLES

In spite of the efforts made to control variables there were two variables over which it was impossible to exercise control. One was the rotation of teachers between experimental and control groups. One teacher dropped out of the experimental group early in the second year due to illness and two dropped out at the end of the second year due to change of position to another school system. There were comparable changes, however, in the control classes. Twelve of the 15 teachers possessed Master's degrees and the other three had Bachelor's degrees, two of the latter working in the nongraded components. The exchange of teachers between experimental and control groups at the end of each year proved unfeasible because those in the nongraded components did not want to change and most of those in the control sections did not want to change either. Hence the experimental groups were staffed by teachers who wanted to be in a nongraded program and the control classes were staffed by teachers who preferred the self-contained classroom. There is no way of knowing to what degree this factor influenced the results.

The other uncontrolled factor was intercommunication between teachers of experimental and control groups. The staff situation in Casis school has been most wholesome over the years with the absence of cliques and a wide distribution of leadership roles by teachers. All teachers participated in the Monday faculty meetings but cooperative planning at other times was

TABLE 4

Grade Equivalent Scores Illustrating Comparability of Experimental and Control Groups, Metropolitan Achievement Test, Fall 1965

	Grade Equivalent Scores				
THIRD GRADE	High	Low	Mean	S D	No. of Pupils
1. Word Knowledge					
a. Control	7.9	1.1	4.3	1.2	98
b. Experimental	7.6	2.1	5.0	1.2	22
2. Reading					
a. Control	7.9	2.4	4.4	1.3	98
b. Experimental	7.7	3.0	5.4	1.4	22
3. Spelling					
a. Control	6.5	1.8	4.0	1.0	98
b. Experimental	6.5	2.2	4.5	1.1	22
4. Arithmetic Computation					
a. Control	4.8	1.9	3.4	0.6	98
b. Experimental	4.8	2.6	3.8	0.5	22
5. Arithmetic Problem Solving					
a. Control	5.5	2.3	3.7	0.7	98
b. Experimental	5.7	2.7	4.3	0.8	22
FOURTH GRADE					
1. Word Knowledge					
a. Control	7.9	2.9	5.9	1.3	106
b. Experimental	7.9	2.0	5.8	1.4	27
2. Reading					
a. Control	7.9	3.3	5.8	1.5	106
b. Experimental	7.9	2.3	5.4	1.7	27
3. Spelling					
a. Control	7.9	3.0	5.3	1.1	106
b. Experimental	7.9	1.8	5.5	1.4	27
4. Arithmetic Computation					
a. Control	5.8	2.2	4.3	0.5	106
b. Experimental	5.8	2.9	4.4	0.7	27
5. Arithmetic Problem Solving					
a. Control	7.8	3.1	4.7	0.9	106
b. Experimental	7.8	2.9	5.1	1.3	27
FIFTH GRADE					
1. Word Knowledge					
a. Control	12.1	4.2	7.5	2.1	110
b. Experimental	11.8	5.6	8.1	2.2	21
2. Reading					
a. Control	12.2	3.8	7.3	2.0	110
b. Experimental	11.8	5.1	7.7	2.4	21
3. Spelling					
a. Control	12.5	3.3	6.7	1.9	110
b. Experimental	11.3	5.0	7.7	2.1	21
4. Arithmetic Computation					
a. Control	8.1	3.8	5.7	0.8	110
b. Experimental	7.5	5.0	6.1	0.7	21
5. Arithmetic Problem Solving					
a. Control	10.3	3.6	6.3	1.0	110
b. Experimental	8.8	4.9	6.8	1.0	21

TABLE 5

Grade Equivalent Scores Illustrating Comparability of Experimental and Control Groups, Metropolitan Achievement Test, Fall 1967

	Grade Equivalent Scores				
THIRD GRADE	High	Low	Mean	S D	No. of Pupils
1. Word Knowledge					
a. Control	7.9	1.3	4.3	1.6	69
b. Experimental	7.9	1.6	4.5	1.6	51
2. Reading					
a. Control	7.9	1.9	4.0	1.4	69
b. Experimental	7.9	1.0	4.1	1.3	51
3. Spelling					
a. Control	7.9	0.0	3.9	1.4	69
b. Experimental	6.8	1.6	4.1	1.4	51
4. Arithmetic Computation					
a. Control	4.2	2.0	3.2	0.6	69
b. Experimental	4.4	2.1	3.5	0.6	51
5. Arithmetic Problem Solving					
a. Control	6.0	2.3	3.4	0.8	69
b. Experimental	5.2	1.8	3.6	0.8	51
FOURTH GRADE					
1. Word Knowledge					
a. Control	7.9	2.7	5.7	1.4	90
b. Experimental	10.0	2.0	5.7	1.9	58
2. Reading					
a. Control	7.9	2.0	5.3	1.6	90
b. Experimental	10.0	1.6	5.5	1.9	58
3. Spelling					
a. Control	7.9	2.3	5.4	1.3	90
b. Experimental	10.0	2.3	5.3	1.5	58
4. Arithmetic Computation					
a. Control	6.0	2.7	4.4	0.6	90
b. Experimental	6.8	3.2	4.3	0.8	58
5. Arithmetic Problem Solving					
a. Control	6.8	3.0	4.7	0.9	90
b. Experimental	8.1	2.6	4.6	1.3	58
FIFTH GRADE					
1. Word Knowledge					
a. Control	10.0	3.0	6.9	1.8	80
b. Experimental	10.0	3.0	7.2	2.0	53
2. Reading					
a. Control	10.0	3.0	6.5	1.9	80
b. Experimental	10.0	3.0	7.0	1.9	53
3. Spelling					
a. Control	10.0	3.0	5.8	1.5	80
b. Experimental	10.0	3.1	6.7	1.7	53
4. Arithmetic Computation					
a. Control	7.0	4.0	5.3	0.6	80
b. Experimental	7.3	3.9	5.4	0.7	53
5. Arithmetic Problem Solving					
a. Control	7.9	3.6	5.7	0.9	80
b. Experimental	8.1	4.2	6.0	0.9	53

usually by grade level groups in the control classes and separate meetings of teachers in each of the experimental components. Whatever intercommunication took place between teachers of experimental and control groups may have had bilateral influence so that our results are not affected thereby.

Along with intercommunication among teachers is the possibility of competition between teachers of experimental and control groups. Although the entire faculty was aware of the fact that a research study was underway and was told repeatedly that the purpose was purely comparative and was not intended to prove that one plan was better than the other, there undoubtedly was at least a subconscious effort by both groups to do their very best. If the latter is true our results ought not to be jeopardized by this factor. At no time did any member of the faculty know the specific hypotheses to be tested in the study.

The Research Plan

Many items about the research design have been identified in the preceding sections. The study was begun in September, 1965, with a pilot nongraded component consisting of three teachers and about 75 pupils representing one section of each of grades 3, 4, and 5. The reason for choosing these grade levels was twofold; the teachers who desired to launch the project preferred these grades and most previously reported studies had dealt with primary grades.

In September 1966 a second three-teacher nongraded component was started with the equivalent of three class sections representing grades 3, 4, and 5. These two three-teacher components represent the experimental groups. At each of these three grade levels three teachers operating self-contained classrooms were used as the control groups. A total of fifteen teachers representing the equivalent of fifteen class sections, nearly 450 pupils per year, were involved in the study.

Although the two three-teacher nongraded components came about naturally without any urge to make it a single six-teacher unit, our experience during these years has led us to believe that three-teacher units are better than larger units. More time can be found for cooperative planning when only three persons are involved than when the time of four or more must be coordinated. It is also easier for each teacher to know all the pupils in the unit reasonably well. It has been our experience that in units of this size each teacher teaches almost every pupil in the unit in at least one subject area during each year.

The data gathering program. The tests given during the study were as follows:

1. The Metropolitan Achievement Test was administered and scored by teach-

ers during the last days of September in 1965, 1966, 1967, and 1968. The appropriate forms were used at the different grade levels. Unfortunately a few fourth graders and several fifth graders scored at 10.0 grade equivalent in some subject areas; 10.0 is the ceiling on the Intermediate Battery.

2. The Iowa Every Pupil Test of Basic Skills was given the early part of April in 1966, 1967, and 1968.
3. Intelligence tests are administered routinely in all Austin schools in grades 2 and 5 each year by a psychometrist and are machine scored. The individual Wecksler-Bellvue test is given to those students who cannot take the group test or who are judged not to have been properly tested by the group test. Transfers-in are given the group test at all grade levels each year.
4. The Children's School Questionnaire developed experimentally by Dr. Beeman Phillips and which includes a measure of children's school anxiety was administered to all pupils by trained graduate assistants in October in 1965, 1967, and 1968.
5. At the end of each month for nine months covering part of 1966-67 and part of 1967-68 each teacher reported on (a) state adopted and supplementary textbooks used with class as a whole or with one or more subgroups, (b) workbooks and similar prepared exercises used with class as a whole or various subgroups, (c) teacher-prepared material used with different subgroups or class as a whole, (d) the number and size of subgroups, (e) pupil transfers from one subgroup to another, (f) the percentage of the class period usually spent with class as a whole or with subgroups and individuals, and (g) the amount of before school and after school time spent in helping individuals. No systematic analysis of classroom activities was made but each teacher provided a description of her teaching; samples of these may be found in a later chapter.
6. In January of 1967 and 1968 each of the fifteen teachers was asked to respond to the *Individualization of Instruction Inventory prepared* by Betty Coody and Ben M. Harris.[1] This inventory requests each respondent to check each of 20 statements on a 5-point scale in a way which best describes that teacher's practices.
7. Each year during the fall months each teacher was interviewed to ascertain the criteria used by her in forming subgroups in reading, spelling, and arithmetic.
8. Two types of data were gathered on children's use of the central library. For a 22-day period in November-December of 1966 and a 22-day period in March-April in 1967 data were obtained on the number and types of books borrowed by individual pupils from each class section and other individual and group uses of the library by pupils. A similar inventory was made at corresponding periods in 1967–68. The Casis school library has been an outstanding elementary school library over the years. During 1964-67 it

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[1] Published by the Extension and Field Service Bureau, The University of Texas at Austin, Austin, Texas 78712.

served as one of the Knapp Foundation demonstration centers. In 1967-68 this library contained 11,216 different titles and 12,242 volumes. In addition to the book collection the library also serves as a general materials center and as such has periodicals, tapes, recordings, film strips, slides, a few films, art prints, picture file, transparencies, maps and globes, science and arithmetic aids which may be borrowed by teachers or pupils. In addition to the above the Casis School shares in the use of the central audio-visual library provided by the Austin Public Schools.

THEORY AND HYPOTHESES

In view of what was said in Chapter 1 and in the above sections of this chapter it should be clear to the reader that this study aimed at an evaluation of nongradedness as a vertical feature of elementary school organization in a setting in which nongradedness was compared with gradedness in an elementary school which for years as a graded school incorporated in its practices a large proportion of the ideas judged as modern practices by most authorities in elementary education. We did not compare Nongradedness with a 1900 version of the Procrustean Bed.

Briefly theory, postulates, assumptions, and major hypotheses are stated below.

Theory. Human behavior is influenced by environment factors.

Postulate 1. The organization of an elementary school is an environmental factor.

Postulate 2. Grading as well as nongrading are features of school organization.

Assumption 1. The environment of a nongraded program differs from that of a graded program.

Assumption 2. A school situation and a research study can be designed in an appropriate way to ascertain the differences in the behavior of teachers and pupils in a graded and a nongraded setting.

Hypothesis 1. There are important differences and similarities between experimental and control classes in the distribution of teachers' instructional time.

SUB-HYPOTHESES

a. There is no difference between experimental and control classes in the total number of minutes per week scheduled as the official period for instruction in each of the three subject areas (reading, spelling, arithmetic).

b. Teachers in experimental classes will devote a smaller percentage of the scheduled instructional time to class-as-a-whole activities than teachers in control classes (calculated separately for each of the three subjects).

c. Teachers in experimental classes will devote a larger percentage of the scheduled instructional time to subgroup and individual instruction than teachers in control classes (calculated separately for each of three subjects).

d. Teachers in experimental classes will devote less time to helping individuals outside of the scheduled instructional period than teachers in control classes.

Hypothesis 2. There are important differences between experimental and control classes in the scope of instructional resources used in each of the three subject areas.

SUB-HYPOTHESES

a. Experimental classes will use a wider range of basal and supplementary texts than control classes in each of the three subjects.

b. Experimental classes will use a wider scope of individualized learning materials than control classes (calculated separately for each of the three subjects).

Hypothesis 3. There are important differences between experimental and control classes in the way subgroups are formed and in the number, size, and achievement range in subgroups.

SUB-HYPOTHESES

a. Teachers of experimental classes rely primarily on achievement data and less on personal-social needs data in forming subgroups while teachers in control classes rely as heavily on personal-social needs data as on achievement data in forming subgroups (calculated separately for each of the three subjects).

b. Each of the 3-grade nongraded components has more subgroups in each of the three subjects than the number of subgroups in a comparable contingent of control classes.

c. Subgroups in each of the nongraded components contain fewer pupils than the subgroups in control classes.

d. Subgroups in experimental classes portray a narrower range in achievement as measured by standardized tests than subgroups in control classes.

e. A larger percentage of pupils change subgroup placement each month in experimental than in control classes.

Hypothesis 4. There are significant differences between experimental and control classes in pupil use of the centralized library in the school.

SUB-HYPOTHESES

a. Children in experimental classes borrow significantly more books from the school library than children in control classes.

b. Children in experimental classes make significantly more use of the school library for reference work than children in control classes.

Hypothesis 5. There are significant differences between experimental and control groups in children's school anxiety as measured by the Children's School Questionnaire.

SUB-HYPOTHESES

a. Each year of the study children in experimental classes will show less school anxiety than pupils in control classes.

b. The difference in school anxiety scores favoring experimental classes will increase over the 3-years of the study.

Hypothesis 6. There are significant differences between experimental and control groups in children's achievement as measured by standardized achievement tests.

SUB-HYPOTHESES

a. Children in experimental classes will show significantly greater progress each year of the experiment in each of the sub-sections of the Metropolitan Achievement Test than pupils in control classes.

b. Children in experimental classes will show significantly greater progress each year of the experiment in each sub-section of the Iowa Test of Basic Skills than pupils in control classes.

c. The differential in progress (as measured by standardized achievement tests) favoring experimental classes will be greater the second year than the first year.

CHAPTER III

INSTRUCTIONAL PRACTICES

HENRY J. OTTO AND DONALD H. WILLIAMS

This chapter summarizes the findings pertaining to instructional practices in experimental (nongraded) and control (graded) classes.[1] The data were gathered over a time period ranging from October 1966 to February 1968. Interview and report data were obtained from 6 teachers in experimental and 9 teachers in control classes. The experimental portion of the project contained two nongraded components, each containing three teachers teaching pupils normally classified in Grades 3, 4, and 5.

THE HYPOTHESES

Hypothesis 1. There is no difference between experimental and control classes in the total number of minutes per week (average) scheduled as the official period for instruction in each of the three subject areas (reading, spelling, arithmetic).

Hypothesis 2. Teachers in experimental classes will devote a smaller percentage of scheduled instructional time to class-as-a-whole activities than teachers in control classes (calculated separately for each of the three subjects).

Hypothesis 3. Teachers in experimental classes will devote less time to helping individuals before and after school than teachers in control classes (calculated separately for each of the three subjects).

Hypothesis 4. Experimental classes will use a wider range of current state adopted basal texts than control classes in each of the three subjects.

Hypothesis 5. Experimental classes will use a wider range of supplementary texts than control classes in reading.

Hypothesis 6. Experimental classes will use a wider scope of individualized learning materials than control classes (calculated separately for each of the three subjects).

Hypothesis 7. Experimental classes will use more teacher prepared learning materials than control classes (calculated separately for each of the three subjects).

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[1] This chapter and chapter 4 were prepared by the senior author and are a digest of the disseertation of Donald H. Williams entitled *A Comparison of Instructional Practices of Graded and Nongraded Classes in an Elementary School Setting,* The University of Texas at Austin, August 1968.

Hypothesis 8. Teachers of experimental classes rely more heavily on achievement test data and less on personal-social needs data in forming subgroups than teachers in control classes.

Hypothesis 9. Both of the nongraded components have more subgroups in each of the three subjects than the number of subgroups in a comparable contingent of control classes.

Hypothesis 10. Subgroups in each of the nongraded components contain fewer pupils than the subgroups of control classes.

Hypothesis 11. Subgroups in the experimental classes portray a narrower range in achievement as measured by standardized tests than subgroups in control classes.

Hypothesis 12. A larger number of pupils change subgroup placement each month in experimental than in control classes.

Hypothesis 13. Children in experimental classes borrow more books from the school library than children in control classes.

Hypothesis 14. Children in experimental classes make more use of the school library for reference work than children in control classes.

COMPARABILITY OF CLASS SECTIONS

In the school selected, the children at each grade level were sectionized according to a procedure called "planned heterogeneous grouping." This meant that each section had approximately the same percentage of boys and girls, a comparable distribution of intelligence quotients, and the same attention given to special needs (twins). The following grade equivalent scores are illustrative of the comparability of control and experimental classes. The scores are those of students who were in register level four in the Fall of 1967. All scores were taken from the results of the Metropolitan Achievement Test:

(1) Word knowledge.
Experimental 5.7, control 5.7;
(2) Reading.
Experimental 5.5, control 5.3;
(3) Spelling.
Experimental 5.3, control 5.4;
(4) Arithmetic computation.
Experimental 4.3, control 4.4.

Each section which had extremely immature or extremely mature pupils had two or three pupils in each of these categories and avoided isolates in terms of maturity or teaching problems. This plan provided each teacher with approximately the same complex of pupils to be taught.

Data Collection

Briefly data for the comparison of the five foci were collected in the manner described below.

(1) Distribution of the teachers' instructional time: through the medium of the face-to-face interview, each October data concerning the following were collected:

- (a) Number of minutes per week officially scheduled for each of the three subjects (reading, spelling, arithmetic);
- (b) Number of minutes per week (of that officially scheduled) devoted to class-as-a-whole activities vs. time devoted to work with subgroups and individuals (calculated separately for each of the three subjects). The teachers' official schedules were checked against the information gleaned from the interviews and all discrepancies resolved.
- (c) The amount of time devoted to helping individuals before and after school in the three subject areas was obtained through the *Teacher's Monthly Report* described subsequently.

(2) Use of materials and resources: a monthly report form, the *Teacher's Monthly Report* was designed for use in data gathering, utilizing available constructive comments concerning several essential requirements of such an instrument. Data were compiled (separately for each of the three subjects) indicating the scope of resources used, and dealt with the following:

- (a) State adopted basal textbooks;
- (b) State adopted supplementary textbooks (in reading only);
- (c) Other supplementary books used, including out-of-adoption textbooks and supplementary readers;
- (d) Individualized learning materials;
- (e) Teacher-made materials;
- (f) Substantial information describing the manner in which the above (a–e) were used, e.g., with the class-as-a-whole.

(3) Grouping practices

- (a) Criteria for grouping: The criteria most often used by the participating teachers for the placement of pupils within subgroups were obtained through the use of a form prepared for that purpose. The teachers were asked to rank order three criteria used in each of the three subjects. A distinction was made between the criteria used at the beginning of school and those used at "other" times.
- (b) The number of subgroups, if any, taught by each teacher;
- (c) The movements each month of pupils from one subgroup to another were provided by the *Teacher's Monthly Report.*
- (d) The size of the subgroups: All teachers were asked in the fall of 1965 and in January, 1968 to designate the subgroup in which each child was working for that month (for each of the three subjects). This gave some indication of the size of the groups with which the teachers usually worked. A special form was devised for this purpose.

  - (e) The ranges in achievement within the subgroups (for each of the three subjects); this was determined by comparing the Metropolitan achievement test scores within subgroups of the experimental and control classes for the fall of 1965 and 1967.

(4) Library usage: To investigate the existence of differences between graded and nongraded classes in pupil use of the library, school records were utilized to consider:

  - (a) Use of the library for reference work; and
  - (b) Individual borrowing: Two 4-week records were used each year as the primary source.

(5) Individualization of instruction: To supplement the data obtained by the *Teacher's Monthly Report,* the *Individualization of Instruction Inventory* was administered once each year. The decision was made to have the teachers rate or score themselves with the instrument, which is composed of four sections:

  - (a) Intraclass grouping;
  - (b) Variety of materials;
  - (c) Pupil autonomy; and
  - (d) Differential assignments.

During the course of the investigation, a determined effort was made to secure comments of teachers and administrative personnel relative to the topics studied.

Needless to say, many times during the period of research it became imperative that the investigator conduct numerous informal conferences with the participating teachers and administrative staff. This was done most often to clarify descriptive data and to validate questionable findings.

TIME FOR INSTRUCTION

In October, 1966 and in October, 1967 all teachers were interviewed to ascertain the amount of time devoted to instruction in each of the three subjects. Official class schedules were compared with the interview data and differences reconciled through conferences with each teacher. Table 6 contains these data and is the average of the two inventories.

Hypothesis 1.

Reading. The average number of minutes per week officially scheduled for reading was 273 for the nine control sections and 210 for the six experimental classes .Thus, the teachers of control sections scheduled more than one hour each week beyond that set aside by teachers of the experimental groups.

While teachers of both the nongraded components scheduled less time for reading, nongraded II scheduled 34 minutes per week more than nongraded I.

The control sections also possessed a much wider range in the amount of officially scheduled time. Control classes had a range of 200 minutes, compared to that of 53 minutes for the experimental sections. The difference between the ranges of the two nongraded components was only 12 minutes (not shown in table).

Spelling. Teachers of the nine control sections (Table 6) scheduled approximately the same number of minutes per week as did teachers of the six experimental sections (5 minutes less). There was a considerable difference between the two nongraded components; nongraded II scheduled 34 minutes more than nongraded I. This was a larger difference than the difference between the average of the nongraded components and the average of the control groups.

Arithmetic. The amount of officially scheduled instructional time for arithmetic (Table 6) averaged 282 minutes per week for teachers of the control groups and 250 minutes per week for teachers of the experimental groups, a difference of 32 minutes per week. The two nongraded components, which comprised the experimental group, scheduled approximately the same amount of time.

The range within the control groups was 60 minutes, compared to 38 minutes for the experimental groups. However, there was a greater difference between the ranges of the two nongraded components (35 minutes) than between the experimental and control groups (22 minutes); these data are not shown in Table 6.

Hypothesis 2 was tested by data summarized in Table 7.

Reading. Teachers of the 9 control sections devoted a much larger part of their time (24 percent) to class-as-a-whole activities than did teachers

TABLE 6

Officially Scheduled Weekly Time Allotments in Minutes

(Combined average for October, 1966, and October, 1967)

	Graded Sections										Nongraded Components		
	3	3	3	4	4	4	5	5	5	av.	II	I	av.
Reading	300	300	275	250	293	390	245	190	212	273	227	193	210
Spelling[1]	90	110	125	125	122	137	105	100	103	113	135	101	118
Arithmetic[2]	250	300	288	287	310	288	257	258	300	282	250	249	250

[1] A 4th grade teacher in the graded section scheduled 100 minutes plus 45 minutes weekly with a small group consisting of students from all three 4th grade rooms (October, 1966).

[2] A 4th grade teacher in the graded section scheduled 275 minutes plus 45 minutes weekly with a small group consisting of students from all three 4th grade rooms (October, 1966).

of the 6 experimental sections (5 percent). It is interesting to note that the nongraded I component scheduled no time for these activities, as compared to 10 percent of the scheduled time for nongraded II.

There was a very wide range among the control sections. A third grade teacher devoted no time to class-as-a-whole activities, while one of the fifth grade teachers consumed 62 percent of that officially scheduled for reading instruction.

Spelling. In spelling, too, teachers of the 9 control sections devoted a much larger portion of their officially scheduled time to class-as-a-whole activities (Table 7). The control groups devoted 62 percent of their time, as compared to 28 percent for the experimental groups. There was only a slight difference between the two nongraded components in the percent of time spent with the class-as-a-whole.

The range could not have been larger for the control groups. A third grade and a fourth grade section spent no time in spelling with the class-as-a-whole, while the other third grade sections and a fifth grade section consumed 100 percent of their scheduled time in these activities.

The range of the experimental groups was less, but one section devoted 16 percent to class-as-a-whole activities, compared to 50 percent by another.

Arithmetic. In the area of arithmetic, both the control and experimental groups devoted more time to class-as-a-whole activities than to individual or subgroup instructional activities (Table 7).

The 9 control sections, on the average, devoted 70 percent of their scheduled time to these activities. The experimental classes consumed 56 percent. There was, however, as much difference between the two nongraded components as there was between nongraded I and the control group.

For the control groups the range, again, could have been no greater. A fourth grade section spent no time in class-as-a-whole activities, while

TABLE 7

Percent of Officially Scheduled Weekly Time Allotments Devoted to Class-as-a-Whole Activities

(Combined average for October, 1966, and October, 1967)

	Graded Sections										Nongraded Components		
	3	3	3	4	4	4	5	5	5	av.	II	I	av.
Reading	0	13	16	10	47	5	20	40	68	24	10	0	5
Spelling	0	100	100	0	85	65	100	50	60	62	30	27	28
Arithmetic	37	100	100	0	86	25	100	100	83	70	51	61	56

two third grade and two fifth grade sections devoted the entire time to these activities.

The range was also large among teachers of the experimental groups, being from 25 to 100 percent. Teachers in nongraded I had a much larger range than teachers in nongraded II.

Hypothesis 3 was tested by data summarized in Table 8. Teachers in experimental classes devoted less time to helping individuals before and after school hours than teachers of control classes.

Since hypothesis 1 was only partially supported due to variations in scheduled time allotments for each of the three subjects, the question arises whether one should accept or reject this hypothesis. Such research as has been done about the relationship between achievement and instructional time leaves mixed findings; time variations due to pupil age and ability make such research very difficult.[2]

TABLE 8

Average Number of Minutes Per Week Devoted to Helping Individuals Before and After School

	Graded Sections										Nongraded Components		
	3	3	3	4	4	4	5	5	5	av.	II	I	av.
Reading	53	9	13	59	12	44	22	2	0	24	13	1	7
Spelling	29	0	14	27	7	31	18	11	64	22	10	1	6
Arithmetic	37	17	21	147	14	47	28	21	7	37	19	24	22

Hypothesis 2 can be accepted since teachers in experimental classes did devote a smaller percentage of scheduled instructional time to class-as-a-whole activities than teachers in control classes. Hypothesis 3 must be accepted since experimental teachers did devote less time to helping individuals before and after school (neither group spent much time in this way). In general, it seems safe to conclude that there were no important differences between experimental and control classes in the instructional time alloted to each of the three subjects under consideration; the main difference was in time devoted to class-as-a-whole activities, the experimental classes giving noticeably less of their time to such activities.

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[2] Jarvis, Oscar T., *Time Allotments and Pupil Achievement in the Intermediate Grades.* Houston, Texas: Bureau of Educational Research and Services, University of Houston, Nov. 1962.

Moore, D. I., *Pupil Achievement and Grouping Practices in Graded and Ungraded Primary Schools.* Ann Arbor, Mich.: University of Michigan doctoral dissertation, 1963.

THE USE OF INSTRUCTIONAL MATERIALS

Data concerning the use of instructional resources were drawn each month for nine consecutive months from the *Teacher's Monthly Report*. Table 9 summarizes the number of different titles of current state adopted basal texts that were used during the nine-month period.

Reading. The 9 control sections (Table 9) used an average of 3.55 different titles per teacher. This was in sharp contrast to the average of 1.33 different titles per teacher for the experimental group.

The range in the level of difficulty of the texts used also favored teachers of control classes. Of the teachers in the nongraded groups who used basal texts, none used books covering more than 2 grade levels (those books usually designated as graded materials, i.e., 2nd grade). Teachers in 8 of the 9 graded sections used books spanning at least two grade levels; two of these teachers utilized materials spanning 4 grades.

Nongraded component I was unique in that none of its three teachers used a basal text. There was an important difference between the two nongraded components in the average number of different titles used. Teachers in nongraded I used no books, while those in nongraded II used an average of 2.66 titles per teacher.

Spelling. Teachers of control sections used an average of 1.66 titles per teacher as compared to the 2.50 titles per teacher in the experimental sections (Table 9). The range in the number of different titles utilized was approximately the same for both groups.

TABLE 9

Average Number of Different Titles of Current State Adopted Basal Texts Utilized

	Graded Sections	Nongraded II	Nongraded I	Nongraded Total
Reading	3.55	2.66	0.00	1.33
Spelling	1.66	2.33	2.66	2.50
Arithmetic	1.11	2.00	1.33	1.66

Unlike reading, the range in the level of difficulty of the basal texts used favored teachers of the experimental sections. Four of the 9 teachers of graded sections used texts spanning more than one grade level, two of them spanning 3 grade levels. Five of the 6 teachers of nongraded sections derived service from texts covering more than one grade level; four of the 5 used basal texts specified for 3 different grade levels.

Arithmetic. As in spelling, teachers of nongraded sections used, on the average, more basal titles per teacher for the 9 months (Table 9). Teachers of experimental sections averaged 1.66 titles to that of 1.11 titles for teachers of control sections. There was a greater difference between teachers of the two nongraded components in the number of titles used than between the averages of teachers in the experimental and control groups.

The range in level of difficulty of the texts used was greater for the experimental sections than for the control sections. Only one graded section obtained service from texts specified for more than one particular grade.

Current State Adopted Supplementary Texts. There was a difference between the experimental and control sections in the use of current state adopted supplementary texts (Table 10). Teachers of control sections averaged 3 titles per teacher to that of 1.5 titles for teachers of the experimental groups. However, the difference between teachers in the two nongraded components was as great. The range in the level of difficulty of the texts used was comparable for the teachers of control and experimental classes.

Supplementary Texts Other Than Current Adopted Titles. The experimental and control sections used, on the average, the same number of titles (Table 11). The range in the level of difficulty of the books used appeared to be comparable.

Of importance was the difference, in the average number of titles used per teacher, between the two nongraded components. Teachers in nongraded component II used 4 times as many as those in nongraded I. This

TABLE 10

Average Number of Different Titles of Current State Adopted Supplementary Texts Used in Reading

	Nongraded		
Graded Sections	II	I	Total
3	.66	2.3	1.5

TABLE 11

Average Number of Different Titles of Supplementary Texts Used in Reading Other Than Current State Adopted Titles

	Nongraded		
Graded Sections	II	I	Total
5	8	2	5

was essentially the reverse of what the data showed for current state adopted texts.

Mention must be made of two factors that had an effect on the use of both basal and supplementary books. One of the factors was a tendency on the part of teachers to "stay away from" the currently state adopted books designated for other grade levels. This was partially true for the nongraded teachers in teaching children on particular levels. The tendency was reinforced by the ample supply of supplementary books and an unusually well equipped library.

The other factor alluded to was apparently a difference of emphasis in the approach to reading. Teachers of nongraded sections made more frequent references to the use of laboratory and programed materials, especially those in nongraded I. Teachers in this component reported no use of current state adopted basal readers at all, but they used more supplementary books than their counterparts. Nongraded I teachers also indicated a close association of reading and social studies. Indeed, their reading groups were often formed around "interest" areas in social studies.

Individualized Learning Materials. A variety of materials was reported by the participating teachers; a number of these sources were quite similar in nature (Tables 12, 13, and 14). Due to the foregoing and because most of the responses fell within a limited number of categories, a truncated list of resources utilized was developed (i.e., *Weekly Readers, Young Citizen,* and *Newstime* were subsumed under the category of student newspapers). The following discussions, of the materials used in each of the three subject areas, were not made without the realization that the frequency of use during any one month was not considered. Consideration was given only to determining what particular materials were used each month.

TABLE 12

Number of Months Specific Individualized Materials Were Utilized in Reading

	Graded Sections										Nongraded Section							
										II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
Laboratory and programmed materials	8	0	0	9	9	9	7	7	6	6.1	7	8	3	6.0	8	8	8	8	7.0
Workbook materials	8	9	9	6	7	6	5	1	0	5.6	7	8	0	5.0	0	0	0	0	2.5
Student newspapers	9	0	3	4	0	3	0	3	3	2.8	4	0	0	1.3	0	0	0	0	.66
Practice exercises and skill builders	0	0	1	0	0	0	0	2	0	.3	5	4	1	3.3	0	0	0	0	1.6
Other	9	0	4	0	0	1	0	5	0	2.0	5	6	7	6.0	1	1	1	1	3.5

TABLE 13

Number of Months Specific Individualized Materials Were Utilized in Spelling

											Nongraded Sections								
	Graded Sections										II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
Special word lists and sentences	7	0	0	7	0	8	0	1	0	2.6	1	0	0	.3	0	0	0	0	.2
Other materials	5	0	2	0	3	0	0	1	0	1.2	4	9	3	5.3	2	2	2	2	3.6

TABLE 14

Number of Months Specific Individualized Materials Were Utilized in Arithmetic

											Nongraded Section								
	Graded Sections										II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
Published practice cards	9	6	8	7	9	9	3	1	0	6.0	9	9	4	7.3	0	0	0	0	3.6
Tools of measurement	6	0	8	0	0	2	0	0	0	1.8	2	4	3	3.0	0	0	0	0	1.5
Practice and work exercises	4	0	0	4	1	5	0	0	0	1.6	3	3	0	2.0	0	0	0	0	1.0
Other materials	3	0	3	3	7	6	1	5	0	3.3	5	6	2	4.3	0	0	0	0	2.0

TABLE 15

Number of Months Specific Teacher Made Materials Were Utilized in Reading

											Nongraded Sections								
	Graded Sections										II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
Charts, graphs, maps	8	8	1	6	9	8	0	0	0	4.4	7	6	5	6.0	0	0	0	0.0	3.0
Practice and work exericses	8	8	5	7	7	8	0	0	0	4.8	7	5	2	4.7	0	0	0	0.0	2.3
Flash cards and supplementary words	7	2	3	8	2	6	0	1	0	3.2	6	3	4	4.3	0	0	0	0.0	2.1
Games, toys, puzzles	5	0	3	3	4	3	0	0	0	2.0	5	6	0	3.6	0	0	0	0.0	1.8
Other materials	6	2	4	7	8	8	0	0	0	3.9	1	4	2	2.3	0	0	0	0.0	1.1

Use of Teacher-made Materials. In reading the teachers of control sections reported the use of 13 different items during the course of nine months. These items, together with the 10 items reported by teachers of experimental classes, were subsumed within five classifications as shown in Table 15. In spelling (Table 16) the control sections utilized 10 different items while the experimental sections used seven different types of materials. In arithmetic control sections used 11 different types of materials while the experimental groups used seven items (Table 17).

Hypotheses 4, 5, 6, and 7 dealt with the use of instructional resources and it was hypothesized that experimental classes would use a wider range of state adopted texts, a wider range of supplementary texts, a wider range

TABLE 16

Number of Months Specific Teacher Made Materials Were Utilized in Spelling

										Nongraded Sections								
	Graded Sections									II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
New terms from social studies	9	9	8	9	9	9	6	5	5	7.7	7	6	1	4.6	0	0	0	0.0	2.3
New terms from science	8	9	8	9	8	9	2	2	1	6.2	5	4	1	3.3	0	0	0	0.0	1.7
New terms from arithmetic	8	6	6	7	5	8	2	3	1	5.1	3	5	1	3.0	0	0	0	0.0	1.5
Games and puzzles	0	0	5	6	3	3	3	0	0	2.2	3	5	0	2.6	0	0	0	0.0	1.3
Other materials	1	0	4	0	4	5	0	0	2	1.8	0	7	6	4.3	0	2	0	0.7	2.5

TABLE 17

Number of Months Specific Teacher Made Materials Were Utilized in Arithmetic

										Nongraded Sections								
	Graded Sections									II				I				Total
Materials	3	3	3	4	4	4	5	5	5	av.	n	n	n	av.	n	n	n	av.	av.
Tools of measurement	0	1	0	4	8	2	0	4	0	2.1	2	1	1	1.3	0	0	0	0.0	0.7
Practice and work exercises	9	6	2	5	2	6	0	1	0	3.4	7	8	7	7.3	0	0	0	0.0	3.6
Charts and graphs	6	0	1	9	7	5	0	0	2	3.3	7	4	1	4.0	0	0	0	0.0	2.0
Other materials	1	2	4	6	9	7	3	4	0	4.0	7	4	6	5.7	0	0	0	0.0	2.8

of individualized learning materials, and a wider range of teacher-prepared materials than the control classes. The ensuing tabular arrangement summarizes the findings. An X placed in the appropriate column identifies the side favored by the findings.

Criterion	*Control*	*Experimental*
Basal texts		
Reading	X	
Spelling		X
Arithmetic		X
Supplementary texts		
State adopted	X	
Other	–	–
Individualized materials		
Reading	X	
Spelling	–	–
Arithmetic	X	
Teacher made materials		
Reading	X	
Spelling	X	
Arithmetic	X	

The best general conclusion one can draw is that not one of the four hypotheses was supported by the data. In a school like Casis in which teachers have made many efforts over the years to adapt instruction to individual differences the use of instructional resources does not change appreciably when part of the faculty launches a nongraded program.

Library Usage

Data were collected during 65 school days (22 school days in October–December, 1966; 23 days in March–April, 1967; 20 days in March–April, 1968). Only 7 of the 9 control classes participated in this phase of the study. Two of the 3rd grade sections were housed several blocks from the main campus in a small "neighborhood" primary school. These two classes used different library facilities and were not included for this reason.

All data concerning children's independent use of the library usage were reported by the students themselves. The library staff of the school devised check sheets on which the students indicated the nature or purpose of their visits. Students simply checked the appropriate category at the end of each library visitation. The column of data for the entire 65 days were summed. Average usages were obtained by dividing the data in each classification by the average daily attendance for the 65-day period of the control and experimental classes. Children's borrowing of books for home or classroom use were classified and tabulated at the end of each day by a librarian using the charge cards filled out during the day.

Hypothesis 13 stated that children in experimental classes borrow more books from the school library than children in control classes. Table 18 indicates that pupils in the control classes reported a greater number of books borrowed per pupil in ADA than pupils in experimental classes in three categories or classifications. Students in experimental classes reported more use in the other three categories. The difference between the averages of the students in control and experimental sections in the 6 categories were small, however. In the classifications of nonfiction and story collections, their averages were the same.

Both groups utilized books in the classifications of fiction and nonfiction to a much greater degree than books of other categories. Indeed, these two categories were used more than the other 6 areas combined. Students of control sections indicated slightly more use of fiction materials, while the averages were the same in nonfiction utilization. Biographies and folk-fairy tale books followed in the number of books borrowed.

The average number of total books borrowed per ADA was approximately the same for the control and experimental pupils, being 30.9 and 30.3, respectively.

Students of the two nongraded components differed more between themselves, in the number of books borrowed, than the control and ex-

TABLE 18

Books Borrowed in Sixty-five Days
Per ADA by Classification

			Nongraded					
	Graded		II		I		Total	
Classifications	Total	Av.	Total	Av.	Total	Av.	Total	Av.
Fiction	2925	15.6	1073	13.1	1337	16.2	2410	14.7
Nonfiction	1478	7.9	672	8.2	641	7.8	1313	7.9
Biography	613	3.3	317	3.9	278	3.4	595	3.6
Easy	126	.7	59	.7	46	.6	105	.6
Folk Tales	399	2.3	131	1.6	177	2.2	308	1.9
Story Collection	156	.8	37	.5	89	1.1	126	.8
Vertical File	58	.3	48	.6	28	.3	76	.5
Periodicals	17	.1	12	.1	37	.4	49	.3
Grand Total	5772		2349		2633		4982	
Books Borrowed in 65 Days per Pupil in Average Daily Attendance		30.9		28.7		31.9		30.3

perimental pupils in 6 of the 8 classifications. Nongraded I students indicated greater utilization of books of fiction, folk tales, periodicals, and story collections (50 percent of the categories) than students in nongraded II classes. The differences in most instances were slight.

Hypothesis 14 stated that children in experimental classes make more use of the school library for reference work than children in control classes.

Table 19 depicts 13 categories or classifications of pupil activities that took place in the school library. In 7 of the 13 classifications of activity students of the control classes indicated greater pupil activity (based on ADA). However, in only 8 of the categories did students of control classes report more than 2 "participations" per ADA for the 65-day period; nongraded I students reported 6 categories and nongraded II students reported 7 categories in which they averaged more than 2 participations per ADA for the identical period.

The 7 most frequent activities reported were, in order of frequency, checking out materials, returning materials, browsing, reading, class reference, personal reference, and choosing materials for their room. Students of control sections reported more participation in 4 of the 7 activities.

By way of summary it may be said that nongraded classes did not borrow

TABLE 19

Number of Library Usages in Sixty-five Days and Number per Pupil in Average Daily Attendance by Classification

			Nongraded					
	Graded		II		I		Total	
Classifications	Total	Per ADA	Total	Per ADA	Total	Per ADA	Total	Per ADA
Returning material	2601	8.6	1094	13.4	925	11.2	2019	12.3
Checking out material	2945	15.7	1194	14.6	992	12.1	2186	13.3
Reading	1755	9.4	740	9.0	413	5.0	1153	7.0
Browsing	1930	10.3	739	9.0	703	8.5	1442	8.8
Personal reference	526	2.8	296	2.4	239	2.9	535	3.3
Class reference	674	3.6	324	4.0	116	1.4	440	2.7
Choosing room materials	477	2.6	363	4.4	166	2.0	529	3.2
Picture file	139	.7	88	1.1	37	.4	125	.8
Vertical file	139	.7	69	.8	53	.6	122	.7
Viewing	89	.5	21	.2	20	.2	41	.2
Listening	179	.9	76	.9	58	.7	134	.8
Taping	39	.2	11	.1	17	.2	28	.2
Special activity	525	2.8	57	.7	94	1.1	151	.9
Grand total	12013	64.2	5072	61.9	3833	46.6	8905	54.2

more books from the library than control classes. The findings on book borrowing were mixed but it is clear that the differences between the two nongraded components were greater than the average for the nongraded components and the average for control classes. Neither was support found for the hypothesis that nongraded pupils will manifest more independent use of the library than pupils in control classes.

CHAPTER IV

GROUPING PRACTICES

HENRY J. OTTO AND DONALD H. WILLIAMS

The practices used in grouping were examined from the standpoint of viewing them as possible "tools" or means of further individualizing instruction. The examination consists of 5 parts, the: (1) criteria for grouping; (2) number of subgroups; (3) size of subgroups; (4) range in achievement within groups; and (5) movement from one subgroup to another.

The number and size of subgroups are clearly related and, essentially, are inseparable. The literature is replete with studies of the size of groups as related to a number of variables, especially academic achievement. However, these studies (their findings generally mixed and inconclusive) are concerned with *class size,* not the number of subgroups within classes of comparable size. Chapter 3 mentioned that, essentially, the teacher "sets the stage" for learning to a great extent or prepares a situation in which the pupils learn. It is from this vantage point that grouping practices have relevance as tools for the individualization of instruction.

Johnson[1] views the classroom, at any given time, as containing various opportunities for teacher-pupil and pupil-pupil interaction. He states that the amount of interaction is inversely affected as the size of the group increases; the individual has less time to project his own ideas. As the group becomes smaller, the individual might also be able to receive more feedback from his peers or teachers. Several references were given supporting Johnson's position.[2, 3, 4]

Hypotheses 8, 9, 10, 11, and 12 (as stated in Chapter 3) deal with differences between experimental and control sections in the way subgroups are formed, in the number, size, and achievement ranges in subgroups, and in pupil transfers from one subgroup to another as the instructional program moves forward.

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[1] Johnson, Glen R., *An Investigation of the Classroom Related Activities in a Selected Number of Nongraded Elementary School Classrooms.* Teachers College, Columbia University doctoral dissertation, 1968.

[2] Bales, R. F., Hare, A. P., and Borgatta, E. F., "Structure and Dynamics of Small Groups," *Review of Sociology: Analysis of a Decade,* Joseph Guttler, editor. New York: John Wiley & Sons, 1957, pp. 394–402.

[3] Stephen, F. R., and Mischler, E. R., "The Distribution of Participation in Small Groups: An Exponential Approximation." *American Sociological Review,* 17:598–608, October 1952.

[4] Thelen, H. A., *Dynamics of Groups at Work.* Chicago: University of Chicago Press, 1954.

Hypotheses No. 8 stated that teachers of experimental classes rely more heavily on achievement test data and less on personal-social needs data in forming subgroups than teachers of the control classes. Tables 20, 21, and 22 summarize the interview data.

All teachers were asked to indicate, in descending order of importance, three factors or criteria they considered when placing students into subgroups. Further, responses were elicited that sought to reflect changes in these criteria, as dictated primarily by different points in time of the school year; these being the beginning of school and "other" times. Responses were solicited for the three subject areas, reading, spelling, and arithmetic.

A one (1) indicates that the criterion was most important to a teacher; a two (2) that it was second in importance; and, a three (3) denotes that a criterion was tertiary in consideration.

In reading (Table 20), at the beginning of the school year, the combination of daily performance (including informal tests) and standardized test data represent 81 percent of the total responses of teachers of control classes. The same combination accounts for approximately 44 percent of the total votes of teachers of experimental sections. Performance, therefore, rates very high with teachers of graded classrooms as a criterion for pupil placement within subgroups.

Combining pupil maturity and interests into a personal-social needs criterion had the result of including 7 percent of the responses of teachers of control sections. However, this combination includes 33 percent of the choices of the teachers of experimental classes. Personal-social needs of students, therefore, ranked much higher with teachers of experimental sections as a criterion for pupil placement.

After the school year gets under way there is a slight shift in the criteria used by teachers in forming subgroups in reading. Daily performance and standardized test data make up 91.6 percent of the responses of control class teachers and 77.8 percent of the responses of teachers of experimental classes. The personal-social needs criterion was named by 8.4 percent of control class teachers and 22.2 percent of the teachers of nongraded components.

In spelling (Table 21), at the beginning of the school year as well as later, teachers of control sections relied more heavily on performance data and less on personal-social data than teachers of the nongraded components. A comparable relationship existed in the criteria used in grouping in arithmetic (Table 22). The main difference is that teachers of the nongraded components gave a higher priority to standardized test results but

TABLE 20

Criteria Used Most Frequently at the Beginning of School and at "Other" Times in Forming Subgroups for Reading

(Indicating the priority, frequency, and percent of total responses of each criterion)

		Beginning of School				"Other" Times			
		Frequency		Percent Responses		Frequency		Percent Responses	
Criterion	Priority of Importance	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded
Daily Performance									
including teacher	1	4	0	14.80	00.00	9	4	37.5	22.2
observation and	2	1	1	3.70	5.55	3	3	12.5	16.7
informal tests	3	3	1	11.10	5.55	2	3	8.3	16.7
Standardized Tests—									
Metropolitan, Iowa,	1	5	2	18.50	11.11	1	3	4.2	16.7
SRA skill, and	2	5	4	18.50	22.22	3	1	12.5	5.5
basal reader tests	3	4	0	14.80	00.00	4	0	16.6	00.0
Maturity of Pupil-									
emotional-social	1	0	1	00.00	5.55	0	0	00.0	00.0
	2	0	0	00.00	00.00	1	1	4.2	5.5
	3	2	2	7.40	11.11	1	3	4.2	16.7
Comments of Former									
Teacher and Student's	1	0	0	00.00	00.00				
Prior Record	2	2	1	7.40	5.55				
	3	0	2	00.00	11.11				
Interest of Pupil									
	1	0	2	00.00	11.11				
	2	0	0	00.00	00.00				
	3	0	1	00.00	5.55				
Oral Reading Ability									
	1	0	1	00.00	5.55				
	2	1	0	3.70	00.00				
	3	0	0	00.00	00.00				
TOTALS		27	18	99.90	99.96	24*	18	100.0	100.0

* One teacher in the graded sections did not usually change the initial groups.

TABLE 21

Criteria Used Most Frequently at the Beginning of School and at "Other" Times in Forming Subgroups for Spelling

(Indicating the priority, frequency, and percent of total responses of each criterion)

		Beginning of School				"Other" Times			
		Frequency		Percent Responses		Frequency		Percent Responses	
Criterion	Priority of Importance	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded
Daily Performance including teacher observation, weekly tests, and work in content areas	1	5	2	33.3	11.1	7	5	33.3	27.8
	2	2	4	13.3	22.2	5	5	24.0	27.8
	3	3	1	20.0	5.6	4	3	19.1	16.7
Standardized Tests									
	1	0	3	00.0	16.6	0	1	00.0	5.5
	2	3	2	20.0	11.1	1	0	4.8	00.0
	3	1	0	6.7	00.0	0	0	00.0	00.0
Maturity of Pupil emotional-social	1	0	1	00.0	5.6	0	0	00.0	00.0
	2	0	0	00.0	00.0	1	1	4.8	5.5
	3	1	3	6.7	16.6	3	3	14.0	16.7
Comments of Former Teacher and Student's Prior Record	1	0	0	00.0	00.0				
	2	0	0	00.0	00.0				
	3	0	2	00.0	11.1				
TOTAL		15*	18	100.0	99.9	21†	18	100.0	100.0

* Four teachers in the graded sections indicated no grouping practices.

† Two teachers in the graded sections indicated no grouping practices.

TABLE 22

Criteria Used Most Frequently at the Beginning of School and at "Other" Times in Forming Subgroups for Arithmetic

(Indicating the priority, frequency, and percent of total responses of each criterion)

		Beginning of School				"Other" Times			
		Frequency		Percent Responses		Frequency		Percent Responses	
Criterion	Priority of Importance	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded	Graded	Nongraded
Daily Performance includes teacher observation and tests	1	4	1	14.8	5.55	8	3	29.6	16.7
	2	4	3	14.8	16.66	2	4	7.4	22.2
	3	4	2	14.8	11.11	4	2	14.8	11.1
Standardized Tests including chapter tests in text	1	5	5	18.5	27.80	1	3	3.7	16.7
	2	3	1	11.1	5.55	4	1	24.8	5.5
	3	2	0	7.4	00.00	1	0	3.7	00.0
Maturity of Pupil-emotional-social	1	0	0	00.0	00.00	0	0	00.0	00.0
	2	1	0	3.7	00.00	3	1	11.1	5.6
	3	2	3	7.4	16.67	2	4	7.4	22.2
Comments of Former Teacher and Student's Prior Record	1	0	0	00.0	00.00	0	0	00.0	00.0
	2	1	2	3.7	11.11	0	0	00.0	00.0
	3	1	1	3.7	5.55	2	0	7.4	00.0
TOTAL		27	18	99.9	100.00	27	18	99.9	100.0

when this rating is combined with other performance data these teachers placed less emphasis on performance than teachers of control sections. The data in these three tables lead to the conclusion that the hypothesis should be rejected; teachers of experimental classes did not place greater emphasis on performance data and did give more attention to personal-social needs items than teachers of control sections.

THE NUMBER AND FLEXIBILITY OF SUBGROUP ARRANGEMENTS

Teaching pupils in smaller subgroups is one of the time honored methods of adapting instruction to individual differences. Such a practice also enables a teacher to form groups more homogeneous in readiness for new tasks than a whole class would be. Hence the subgroups used in this school were examined. The narrative which follows is more extensive than one might anticipate in a digest of a study because little of this kind of information is found in the professional literature. Hypothesis No. 9 (Chapter 3) stated that each of the nongraded components would have more subgroups in each of the three subject areas than a comparable contingent of control classes.

Data were collected each month for the purpose of determining if differences existed in the number of groups formed for instructional purposes. The period of time covered was from December–May of the 1966–67 school year and from September–February of the 1967–68 school term (a period of 12 months).

Reading. Table 23 summarizes the data reported for reading.

The teachers of control classes had, on the average, one more subgroup in reading each month than teachers of experimental sections. The range was larger in these sections also.

The teachers of the nongraded components varied little in the range of subgroups formed, but exhibited an important difference in number. There was approximately the same degree of difference between teachers of the

TABLE 23

Average Number of Subgroups per Teacher Formed Each Month in Reading and the Range in Number of Subgroups

Graded Sections		Nongraded Sections					
		II		I		Total	
av.	range	av.	range	av.	range	av.	range
3.2	5	3.1	4	1.3	3	2.3	3

two experimental components as between teachers of the graded and total experimental classes.

There were a variety of practices used in the formation of subgroups for instructional purposes. Teachers of the 9 control sections exemplified these variations. One 3rd grade teacher exhibited little change, forming 5 subgroups for 10 of the 12 months, 4 subgroups for 1 month, and 6 groups for another. The two other 3rd grade teachers both formed 4 subgroups each month for 6 of the 12 months. However, during the 1967–68 year (6 months), these two teachers grouped their students horizontally. The sections were combined for reading, each teacher instructing 3 of the 6 groups thus formed. Each month these same teachers changed or "switched" groups; the teacher that taught the 3 groups working at the highest levels of difficulty would, the following months, instruct the groups working at the lowest levels.

The three 4th grade teachers differed from those of the 3rd grade, but exhibited grouping practices in reading that were similar in nature. For 7 of the 12 months, each teacher taught her own register group. One teacher formed 5 subgroups initially, 4 subgroups for the following 2 months, 3 for 3 months, and 4 subgroups the 7th month. A second teacher formed 3 subgroups during the same number of months, 4 groups for 3 months, and 2 groups for the 7th month. The 3rd teacher of the 4th grade created 3 subgroups during all 7 months. The 4th grade teachers followed a similar pattern for the next 4 months except for one major variation. One day per week the 3 sections were grouped horizontally. Two teachers instructed 3 subgroups each. The other teacher had only one group. The twelfth and last month all 3 teachers taught their own register groups and formed 3 subgroups within each of them.

The 5th grade teachers taught their own register groups for the entire period under study. One teacher former 3 subgroups initially and maintained this number throughout. A second 5th grade teacher created 4 groups in each of 5 months and 3 groups for an identical period. In this second section reading was individualized for September and October of 1967. No groups were formed; therefore, these two months were not included in calculating the average number of subgroups created. A third 5th grade teacher taught the entire class as a whole for 9 of the 12 months recorded. Two subgroups existed during a 2 month span, and reading was individualized for the remaining period.

The teachers of control sections did not define special individual students as constituting a subgroup. For example, some individuals periodically attended a special reading clinic and one non-English speaking student was instructed separately.

The teachers in nongraded component I initially structured subgroups around 3 levels in each of the subject areas. This was done in order to "group away" a portion of the wide range in individual differences. It also enabled each teacher to instruct a different level in each subject area (i.e., a teacher instructed level 3 students in reading, level 5 students in arithmetic, and level 4 in spelling). The levels corresponded roughly to the skills, concepts, understandings, and content usually ascribed to the 3rd–5th grades. This procedure made it possible for each teacher to interact with practically every student within the component. While at times there were as many as 9 subgroups among the teachers of nongraded component I, the basic pattern was for each teacher to have one group each. Most often, one teacher taught a group containing students from register levels 3–5. A second teacher's group generally was composed of students from register levels 3–4, and a third group was comprised of levels 4–5. In December, 1967, the component deviated from this general practice by working within their own register groups. Each year during December and January the subgroups were based upon social studies "interests" areas, not upon reading achievement. During these months the groups were fluctuating and changing consistently, making it difficult to assess the average number of groups (and consequently the movement within them). The teachers in nongraded component I also extensively used SRA's reading laboratories, individualizing its reading instruction to some degree.

Nongraded component II averaged 3 subgroups per teacher. The teachers in this component also followed the practice of assigning pupils from different register levels within specific subgroups. This invariably meant, as in the other nongraded sections, that students of various ages were represented in most of the subgroups. For approximately half of the period reported, 12 subgroups were created among the 3 teachers. Eight of these groups were made up of students from register levels 3–4, while the other 4 usually contained pupils from register level 5. During the last 6 months the total number of subgroups within this component was decreased to 6 or 7. Two teachers created 2 subgroups each; one instructed students from register levels 3–4, the other taught students from levels 3–5. The 3rd teacher alternated between 2 and 3 subgroups which consisted of students from register levels 4–5.

Spelling. Table 24 indicates that for spelling there was little difference in the number of subgroups formed by the teachers of control and experimental sections. As in reading, teachers of control sections had a greater range in the number of subgroups formed.

Teachers of the 9 control sections most often taught their own register students in spelling. One 3rd grade section was instructed within 2 subgroups for the entire period. A second section was taught in class-as-a-whole activities for 5 months and within 2 groups during the remaining 7 months. The teacher of the third class utilized class-as-a-whole procedures for 9 of the 12 months. Two subgroups were formed during the balance of the time.

TABLE 24

Average Number of Subgroups per Teacher Formed Each Month in Spelling and the Range in Number of Subgroups

Graded Sections		Nongraded Sections					
		II		I		Total	
av.	range	av.	range	av.	range	av.	range
1.7	3	1.8	1	1.9	2	1.87	2

The 4th grade classes were also taught for a majority of the time by the teacher to whom the students were originally assigned. However, for a 3 month period, one of the teachers taught a "special group" composed of students from all three 4th grade sections. The work was classified as remedial in nature and most often was done once weekly. One section was composed of 2 subgroups for 5 months and 3 subgroups for the remaining 7 months. A second section was taught as a whole class for 9 of the 12 months and as 2 subgroups for the balance of the time. For 6 months, the third section was made up of 2 subgroups. During the remaining 5 months the teacher of this last class formed 4 and 3 subgroups for 2 and 3 months, respectively.

Teachers of the 5th grade control sections all taught their own register students for the entire period. One class was taught as a whole for all but one month and was then divided into two groups. For 9 months, a second 5th grade class was taught as a whole, being divided into 2 groups during the remaining time. The teacher of the third class formed 3 groups for half the time and 2 groups for the other 6 months.

Teachers of nongraded component I, on the average, formed 2 groups per teacher in spelling. One section was made up of 2 groups for 7 of the months reported; the groups represented register levels 3–5 for all but one of these months. This class was taught as a whole for the 5 months remaining, consisting of students from register levels 3–5 for three of those months and levels 4–5 during the other two. A second section in nongraded I was divided into 2 groups for 10 months and contained students from register levels 4–5. This class was taught as a whole for the other 8 weeks and included students from register levels 3–5. The third section in this component was taught as 2 groups, representing register levels 3–5 for 8 months. These same levels were taught for 4 months in 3 groups. For one 4 week period this section was taught as a single unit and contained students from register level 3 only. During the latter portion of January and all of February, 1968, the teachers in nongraded I initiated the individualization of instruction through the use of three Science Research Associates Word Power Laboratories. A 2-hour block of time, four days a week, was set aside for language arts instruction. Each pupil was placed in the same level group for spelling as for reading, with the exception of 7 children who formed a separate subgroup.

The teachers in nongraded component II performed similarly to those in component I, but displayed a more consistent pattern. One teacher taught 2 subgroups of students from register levels 4–5 for the entire period. A second teacher taught register levels 3–4 students for 6 months, teaching the class as a whole for 5 of them and as 2 subgroups for the other. Register level students 3–5 were taught during the following 6 months, being instructed within 2 groups for all but one month in which the class was taught as a whole. The third component II class was divided into 2 instructional groups for the entire period of the study. For a preponderance of the time this third section was composed of students from register levels 3–5, but periodically 2 of the 3 levels were represented in different combinations.

Arithmetic. Teachers of control sections, on the average, formed fewer groups in arithmetic than did the teachers of experimental sections. The average number of subgroups created was 1.17 for the control classes and 1.97 for the experimental classes (component I averaged 1.6; component II averaged 2.3; no Table given).

Two of the 3rd grade teachers combined their classes and formed 2 groups, each teacher instructing one. Student placement within the groups was based on arithmetic achievement. Each month the teachers exchanged classes so that both could work with all children. The other 3rd grade teacher averaged 3 subgroups per month, teaching her originally assigned students for the entire period. For 3 months, this teacher worked with the class-as-a-whole twice weekly. The remainder of the week was spent with individuals and small groups. These 3 months were not included in computing the average number of groups formed. In May, 1967, a similar procedure was followed with 2 large groups.

The three 4th grade teachers combined their sections and formed 3 "homogeneous" groups, each teacher instructing one each. The students were assigned to groups according to their achievement and performance in this area. Another subgroup, composed of students from the 3 already formed, met once a week for 2 months for additional work.

Two of the 3 teachers in the 5th grade followed the procedure utilized by the 4th grade teachers, that of horizontal grouping. Each teacher taught one large group that was made up of students performing at approximately the same achievement level. During one month (September, 1967) both teachers instructed their own register groups. The other 5th grade class was taught as a whole for the entire 12 months. All students in this class were from the same register group.

Teachers in nongraded components I and II based the placement of students within subgroups primarily on arithmetic achievement and performance. The three classes in each component were divided among the teachers on this basis. Therefore, initially the experimental sections were somewhat homogeneously grouped.

The teachers in nongraded component I created, on the average, 1 group less each month than did their counterparts. One section was made up of students from register levels 4–5 for 11 months. This section was taught as a whole class for 6 months, as 3 groups for 4 months, and as 6 subgroups during the other 4 weeks. Register level 5 students formed 2 subgroups for an additional month. A second class in component I was taught as a whole for 6 months and as 2 groups for a like period. Students from register levels 3–4 were contained in this section for all but 1 month, in which the class embraced register levels 4–5. The third section was taught as a whole for 11 months. It was formed from register level students 3–5 for all but 2 months in which levels 4–5 were represented. Register levels 3–5 were included for the last 4 weeks, being taught in 3 groups. Although teachers in this component had created fewer groups than the other, the last month they formed 10 groups from the 5 that usually existed.

One of the sections in nongraded component II was taught as 2 groups each month. The groups contained students from register levels 3–5 for 10 months. Levels 3–4 and 4–5 were included one month each for the remainder of the period. The teacher of a second section created 2 groups, containing students from register levels 4–5, for 6 months. This section was taught as 2 groups for the other 6 months. The 2 groups contained, for two months, students who would have conventionally been in grades 3, 4, and 5. For an identical period, levels 3–4 were included. The third component II section was instructed as 3 groups for 6 months and as 2 groups for the balance of the time reported. Students from register levels 3 and 4 were contained for half of this period; in the remaining half, groups were formed with register levels 4 and 5 students.

TABLE 25

Number and Size of Group(s) in Reading
January, 1968

	Number of Groups			
	Graded	Nongraded Sections		
Group Size	Sections	II	I	Total
4	1	0	0	0
5	4	0	0	0
6	4	1	0	1
7	5	1	0	1
9	2	0	0	0
10	1	1	0	1
11	2	0	0	0
12	2	0	0	0
13	1	2	0	2
15	1	1	0	1
19	0	1	0	1
24	0	0	1	1
27	1	0	0	0
28	0	0	1	1
33	0	0	1	1
Total	24	7	3	10
Median Size	7	13	28	13

THE SIZE OF SUBGROUPS AND THE ACHIEVEMENT RANGES WITHIN THEM

Hypotheses 10 and 11 projected that nongraded components would have smaller subgroups with narrower achievement ranges than their counterparts in the graded classes. Table 25 summarizes the data for subgroups in reading. Comparable tables were prepared for spelling and arithmetic but are not reproduced in this digest.

In order to obtain an index of the size of subgroups usually formed by teachers one point in time (Januray, 1968) was selected for the collection of the data. The number of groups in operation in reading during this particular month compared favorably with the average for the 12 month period (Table 23). Only 8 teachers of the control sections were represented because the other class was being taught on an individual basis during this particular month.

The medium size of the groups formed by teachers of control classes was much smaller than those formed by teachers of experimental classes. There was a greater difference between the teachers of the nongraded components in the median size of subgroups formed than between the teachers of the control groups and the total experimental classes.

Control classes had a median subgroup size of 7; teachers in the experimental sections formed groups having a median size of 13. The median size subgroup was 13 for nongraded component II classes and 28 for those of component I.

In spelling, as in reading, teachers of control classes usually formed smaller groups. The median size group formed was 13 for the control and 16 for the experimental teachers.

Also, as in reading, the teachers in nongraded component I formed groups that were larger than those of their counterparts. The median size group formed in spelling was 19 in component I classes. The component II subgroups had a median size that fell between 8 and 16; it was probably close to its average size of 13.8.

In arithmetic the median size of subgroups was 23 for the graded classes and 13 for the nongraded components. The nongraded components varied somewhat in median size of subgroups, the figure being 13 for Component II and 16 for Component I. In reading the smallest subgroup contained four pupils in the graded classes and 6 in the nongraded. In spelling the smallest group contained only one pupil in the control component while the smallest group in spelling in the nongraded sections contained four pupils. In arithmetic the smallest subgroup was the same for experimental and control sections, four children. The scatter in subgroup size for reading is revealed in Table 17. The spread was approximately the same in spelling. In arithmetic the graded classes had a larger percentage of subgroups with 19 or more pupils in each.

Due to constant changes in subgroups caused by pupil movement into and out of them, one point in time was selected to obtain data concerning the range in pupil achievement. It was felt that one look, in depth, might indicate if there were major differences between control and experimental classes in the range of achievement within subgroups. Data were collected for each of the three subject areas (reading, spelling, and arithmetic) during January, 1968. The grade equivalents used were obtained from the results of the Metropolitan Achievement Test. The test was administered in the fall of 1967. Reading equivalents were used for the comparisons in the area of reading (the test also included equivalents for word knowledge and word discrimination). Spelling equivalents were used in that area, and those for arithmetic reasoning or problem solving were used for making comparisons in arithmetic.

The differences between the high and low grade equivalents within each of the groups formed are given in Table 26. The total number of groups created in reading are the same as those discussed in hypothesis 9.

Teachers of the control sections had a median difference within groups of 2.8 grade equivalents. The differences within the groups formed by these teachers ranged from .3 to 6.7 grade equivalents.

The teachers of experimental classes had a median difference within their subgroups of 3.5 grade equivalents. The range was practically the same as that of the control classes; the differences ranged from .7 to 6.9 grade equivalents. The median ranges in achievement (without subgroups) of the classes in the nongraded components differed more between themselves than the median ranges of the control classes and the total nongraded classes. Component II classes, which formed twice as many groups as their counterparts, had a median difference that was half that of component I classes. The range for component II was also larger.

Tables comparable to Table 26 were prepared for spelling and arithmetic; these two tables are not reproduced here. In spelling the median achievement range in subgroups was 3.3 in graded classes and 2.7 grade equivalents in nongraded groups. The range in achievement in subgroups varied from .5 grade equivalents to 6.1 in graded classes and from .9 to 5.8 in nongraded groups.

In arithmetic the median range in achievement in problem solving within subgroups was 2.0 grade equivalents in graded classes and 1.9 in nongraded components. The range in achievement in subgroups varied from .2 grade equivalents to 3.8 in graded classes and from 1.0 to 3.8 in nongraded sections.

Pupil Mobility among Subgroups

Data for testing Hypothesis No. 12 were taken from the nine *Teacher's Monthly Reports.* The number of movements of pupils was considered rather than percentages; the average daily attendance of the control groups and for the classes of both nongraded components was approximately 27.

The identification of the movement of children from one group to another was difficult to ascertain in many instances. The figures used are approximations only, and are by no means felt to be unquestionable. One factor that complicated the identification of movements was the practice of several teachers of treating a specific subject as being "individualized" during a particular month. The students of these teachers may have been placed in a subgroup at a time prior to the time of reporting. The data in these instances were not included in computing the averages which follow. Another factor that complicated the assessment of pupil movements was a practice used by the teachers in nongraded I. This component's teachers, for at least 3 of the 9 months, based the formation of groups around interest areas in social studies. The movements were so frequent and random that they were indeterminable by the teachers themselves. Nevertheless,

TABLE 26

Differences Between High and Low Grade Equivalents Within Group(s) for Reading

	Number of Groups			
		Nongraded Sections		
Range	Graded Sections	II	I	Total
.3	1	0	0	0
.5	2	0	0	0
.6	1	0	0	0
.7	1	1	0	1
.8	1	0	0	0
1.0	2	0	0	0
1.4	1	0	0	0
1.7	0	1	0	1
2.1	0	1	0	1
2.3	1	0	0	0
2.4	1	0	0	0
2.6	0	1	0	1
2.8	2	0	0	0
3.1	1	0	0	0
3.2	1	1	0	1
3.7	1	0	0	0
3.9	0	0	1	1
4.0	3	0	0	0
4.1	2	0	0	0
4.3	0	1	0	1
4.5	1	0	0	0
4.6	0	1	0	1
6.3	0	0	1	1
6.6	1	0	0	0
6.7	1	0	0	0
6.9	0	0	1	1
Total	24[a]	7	3	10
Median Difference	2.8	2.6	6.3	3.5

[a] One of the control sections was not included; reading was individualized at this time.

the data do purport to give some indication as to the frequency of pupil movement from one group to another. Table 27 shows the average number of pupil changes per teacher, each month.

In reading the teachers of control classes were favored slightly over those of experimental classes in the number of pupil changes from one subgroup to another. In spelling the experimental classes were favored slightly. The latter was also true in arithmetic. Altogether the differences were small and probably not significant.

An overall view of the findings indicates that all five of the hypotheses should be rejected. Teachers of experimental classes:

1. did not rely more heavily on achievement test data and less on personal-social needs data in forming subgroups than teachers in control classes;
2. did not create more subgroups in each of the subject areas than the number of subgroups in a comparable contingent of control classes;
3. did not form subgroups containing fewer pupils;
4. did not form subgroups with narrower ranges in pupil achievement; and
5. did not portray more frequent pupil changes from one subgroup to another.

TABLE 27

Average Number of Pupil Intergroup Movements Per Teacher Per Month

	Graded Sections				Nongraded Sections		
	3	4	5	Total	II	I	Total
Reading	2.8	3.9	0.0	2.2	1.6	1.3	1.4
Spelling	1.6	1.3	0.1	1.0	1.3	1.3	1.3
Arithmetic	1.8	2.6	0.6	1.7	3.3	1.1	2.0

CHAPTER V

TEACHERS' DESCRIPTIONS OF THEIR PROGRAMS

Most reports of research efforts to evaluate nongraded programs provide little or no information about instructional procedures or resources used in teaching. In this monograph an effort is made to describe what is being compared with what. Chapters 3 and 4 provide an overview of grouping practices, resources used, and time devoted to instruction in each of three subject areas. This chapter contains narrative accounts of a representative sample of teachers' programs written by teachers themselves.

A THIRD GRADE SELF-CONTAINED CLASS

Mrs. Marbeth Sloan teaches one of the three third grade self-contained classes used as a control class in the research. Mrs. Sloan is an experienced third grade teacher who prefers to teach a self-contained classroom program. During 1967–1968 her class contained 26 pupils, two of whom were classified in special education due to hearing loss and were taught reading and spelling by the hearing therapist.

As background for her initial grouping of pupils she had available mental test scores obtained on all pupils (except new transfers-in) the preceding year and Metropolitan Achievement Test scores from the preceding and current September testing program. Her initial grouping of pupils was as follows:

	Groups	*Number of Pupils*
Reading		
	1	5
	2	5
	3	5
	4	4
	5	5
Arithmetic		
	1	10
	2	16
Spelling		
	1	12
	2	12

Flexibility in subgroup membership is illustrated by the following data. During the first three months of the 1967–68 school year, three pupils were moved to a higher subgroup and three to a lower subgroup in reading. No pupils changed subgroup membership in spelling but in arithmetic the grouping varied a great deal; on many days three or four groups were in operation and group membership shifted frequently depending on skills being taught and pupil readiness.

Reading. State adopted basal reading texts were used with all children but with different stress and with varying amounts of time. For the better readers, the basal was used primarily for assurance that no vital skill would be overlooked. The basal was only a small part of the betters readers' instruction. These children often used the SRA Reading Laboratory and much reference materials.

For the children who had reading difficulties, the basal played an important role. The accompanying workbooks are especially good to reenforce skills.

The supplementary readers were used with all children. For the slower students, these books are good to increase vocabulary, speed, and to build interest in reading. Below grade level readers are valuable with these students. For the better reading students, the supplementary readers offer much for recreational reading and are especially good for enriching the social studies program. Books at a higher grade level were used also with these children.

Arithmetic. "In arithmetic, the basal text was used to some extent with all students in my class. I supplement it with other materials for all kinds of students. Supplementary texts are used particularly with the slower students to offer them more practice. Supplementary books (at a higher grade level) are helpful in building enrichment for the faster learners."

Spelling. The state adopted text was used by all students in spelling instruction. It supplies a needed vocabulary core. It by no means will be the only vocabulary. About half of the class will move through this text rapidly and go into a higher level supplementary text, then on to "A List of Spelling Demons." All students have lists taken from other areas of the curriculum.

Social Studies and Science.

GENERAL SEQUENCE OF UNITS IN SCIENCE

Observations and Inferences
Tracks and Traces
Describing the Motion of a Bouncing Ball
Displacement of Water by Air
Case of the Suffocating Candle
Metersticks, Money, and Decimals
Maps

Using Punch Cards to Record a Classification
Describing Location
Characteristics of Magnets
Observing Growth of Seeds
Reporting An Inquiry
Two-Dimensional Representations of Spatial Figures
Observation of Falling Objects
Relative Position and Motion

GENERAL SEQUENCE OF UNITS IN SOCIAL SCIENCE

Texas Geography and Occupations
Machines: Changes Brought About in the Lives of People
Airlines Around the World
American Indian Life
People and Government
Life in Mexico

A Typical Day in November

The children began arriving about 7:55. From this time until 8:15 the time was primarily for individual help. They put away their belongings, then checked a designated table to see if the teacher had put papers there belonging to them. Papers with checks by their names indicated the work was to be taken home; no checks indicated the marked errors were to be corrected, brought to the teacher, and would be checked when the errors were satisfactorily corrected. This process also was often followed during the day.

At 8:15 the roll was checked and announcements made. Responsibilities of the week's five elected leaders were discussed. All through the day, the host, hostess, chairman, secretary, and librarian had specific duties and a checking system was kept on a bulletin board.

The students were learning cursive handwriting, and for the next twenty minutes time was spent in writing four sentences using all the letters on which they had received instruction to this point. The class watched the teacher write the sentences by way of the overhead projector and then received needed assistance while the teacher walked about the room.

From 8:45 until 9:45 the class was involved in reading instruction. The 24 children who remained in this classroom for all academic work were divided into five groups. (Note: Two boys with hearing difficulties had reading and spelling with the hearing therapist.) The most advanced five children were assigned stories in the SRA Reading Laboratory. Yesterday they had completed the basal reader 3–1. The second group (five children) read in the 3–1 basal. The third group (five children) read the Weekly

Reader (for grade 3), and worked its exercises. The fourth group (four children) was assigned social studies words to look up in the dictionary and write their meanings, an assignment to be used during the week as a part of the social studies program. The fifth group (the five children with the most reading difficulty) read in a second grade out-of-adoption basal. Much of the teacher's attention was directed to this fifth group, but during the hour time was spent with each group. Each group had a chairman who was in charge. During the week each child would have varied assignments during the reading period.

From 9:45 until 10:00 a period of Show and Tell was held. This was directed by the class chairman. Three children brought things to show the class and four children had events to tell. Show and Tell and TV Spanish alternate at this time of day.

From 10:00 until 10:35 the class took part in Physical Education. Since this was a rainy day schedule, most of the period was spent in the gymnasium. The two teams (set up at the beginning of each month by the elected team captains), played a favorite, "Prison Ball." Eight balls were used so everyone could be actively engaged.

Math received attention from 10:40 until 11:30. There were three groups at that time. The advanced group (the eight children who have mastered required addition and subtraction facts and showed much adeptness with problems), met with the teacher to begin multiplication. The middle group (nine children), were given problems on the board to put on paper. These were three-digit subtraction, made up to give the needed practice in borrowing or exchanging. The third group (nine children), were assigned two-digit subtraction in the text. After the teacher had met with the multiplication group for about twenty minutes, and an assignment had been made to them, she was free to help the other children. When papers were completed, the teacher checked the work; if errors occurred, the child corrected them and brought the paper back until it was in corrected form. If sufficient time remained after a child was finished with the paper, the teacher gave that child an opportunity to work with suitable flash cards or games.

At 11:35 the class went to the cafeteria for lunch. This class sat together and returned directly to the classroom about 12:05. The children relaxed, read independently, conferred with the teacher for the next ten or fifteen minutes.

From 12:20 until about 12:35 a period called "Literature" was held. Wilder's novel, *Little House in the Big Woods* was completed yesterday by the teacher. Today a child brought his new book of poems by Stevenson and asked the teacher to read some favorites.

The science lesson, a part of the American Association for the Advancement of Science curriculum, was held from 12:35 until 1:10. The current exercise, dealing with the process of communication, called for a drawing of maps to scale. Many children took turns working at the chalkboard while others recorded information on paper. The entire class was involved, and for the most part, worked together on the same activity since the skill was new to all.

From 1:10 until 1:40 the two groups in spelling worked on assignments. The top group, presently consisting of 12 students, wrote sentences with some of the words from the adopted text. This group of students studies words from three or four lessons per week. The other group of 12 students, which studies one lesson each week, took a practice spelling test, correcting their own papers.

From 1:45 until 2:30, the children were engaged in Social Studies. The topic, "How Machines Change People's Lives," had been underway for about two weeks. A fifteen minute movie entitled, "Automation," was viewed. Following the movie, the students at the five tables (units of tables), comprised a group for follow-up. Each of these groups (seated heterogeneously), selected a recorder. The children discussed the movie and in these small groups recorded their ideas on changes machines have brought about in the lives of people. The papers were read to the class the next day and ideas exchanged.

From 2:35 until 3:10, the class was in the music room, where a special teacher taught the music lesson. Art, also under a special teacher, alternates with music at this time of day.

About 3:10, the children returned to their classroom, put things in order, got together their belongings, and were dismissed at 3:15. Three children remained for a few minutes to discuss difficulty with an assignment.

A Teacher's Program-Nongraded Component I

Mrs. Emily Stafford served as chairman of a three-teacher team which taught the nongraded Component I consisting in 1967–68 of 84 pupils who normally would be classified as 26 third graders, 30 fourth graders, and 28 fifth graders. This was the enrollment on the opening day in September. Mrs. Stafford is an experienced teacher who has taught a third grade during most of her professional career.

The schedule for this three-teacher group is as follows:

Schedule (Except on Wednesday's)

8:15– 8:25	Briefing
8:25– 9:15	Math

9:15– 9:45	Spelling
9:45–10:20	Music or Art (Room 207)
9:45–10:20	English (Rooms 206 and 208)
10:20–10:35	Break
10:35–11:20	Reading
11:20–11:55	Music or Art (Rooms 206 and 208)
11:20–11:55	English (Room 207)
11:55–12:09	Evaluation
12:09–12:52	Lunch
12:09–12:52	Lunch
1:15– 1:45	Physical Education
1:45– 3:15	Science, Social Studies

Wednesday Schedule

8:15– 8:45	Assembly
8:45– 9:35	Math
9:30–10:20	Spelling
10:20–10:40	Break
10:40–12:09	Social Studies, Science
12:09–12:52	Lunch
12:52– 1:15	Literature
1:15– 2:00	Science, Social Studies

The initial grouping of pupils in September resulted in four groups in mathematics. These groups were constituted as follows: Group 1 contained only 2 pupils, fifth year students; Group 2 had 24 fifth year and 1 fourth year student; Group 3 contained 1 fifth year and 27 fourth year pupils; Group 4 had 3 fourth year and 25 third year pupils. By November the 84 children had been organized into 5 groups. This rearrangement resulted in moving 9 pupils to a higher subgroup and 11 to a lower subgroup.

Initial grouping in spelling produced 5 groups. Group 1 comprised 6 fifth year pupils; Group 2 contained 4 fifth year pupils; Group 3 had 17 fifth year and 6 fourth year students; Group 4 contained 1 fifth year and 22 fourth year children; Group 5 had 2 fourth year and 25 third year pupils. By November 28 pupils had been moved to a higher and one to a lower group.

No intergrade grouping was done in reading until in October. These three teachers used social studies as a vehicle for teaching reading one-third of the year and SRA materials during the other two-thirds of the time. Social studies is the vehicle in September, December, and March; SRA materials are used during the other months. Mrs. Stafford teaches the social studies to her third year homeroom section. During the months in which SRA materials are used the 84 pupils are divided into 3 groups, largely on the basis of demonstrated achievement in reading, and each teacher handles one of the groups. During the social studies months reading is taught through the use of social studies materials and extensive library resources. The state adopted basal texts in reading are not used in this nongraded component.

Instruction in the social studies is organized around the broad generalizations suggested in the Casis School monographs. The topics in science and their sequence are dictated by the AAAS process approach outline. This school participates in the evaluation of the AAAS program.

The three teachers in the non-graded Component I also group the pupils in physical education on the basis of physical maturity and skills. Usually there are four groups directed and supervised by two members of this team. This arrangement frees Mrs. Stafford so that she can give help to the four pupils in Group 1 in mathematics who are working at the sixth grade level.

Mrs. Stafford's Typical Day in November.
8:15–9:15—26 children from Register 5
4 children from Register 4

As the children entered the classroom there was discussion regarding an assembly to be held tomorrow morning for our nongraded group. Rachel, one of two children planning to share information about Clara Barton, was expressing fear of speaking on the stage. This was an opportunity to help Rachel get her thought on the information she was going to share and how she could create interest, rather than centering thought on herself and her fears. Travis helped in this situation by volunteering that the previous week he had so many interesting things to share that he found difficulty in getting them told in the allotted time. Other children were discussing great images that they hoped to present at a later date.

This math class, which is the highest level of our nongraded, meets in the room where the lowest level has social studies. Several children became interested in the social studies bulletin board and made plans to make certain contributions to the less mature group. This is one of the "extras" of nongraded organization. Prior to this, children have brought illustrative materials, books, and one boy even brought a movie made by his father.

Still other children were discussing points they did not understand in their math assignment or just things of interest to nine, ten, and eleven year olds. The children feel free to use this period before school for discussion and quickly learn that with this freedom goes the responsibility to be ready for work at 8:15.

8:15–8:25 Attendance and routine announcements were followed by a quiet time for silent prayer. This was followed by the Pledge of Allegiance to our flag.

The generalization that we are forwarding throughout our nongraded at this time is:

> The work of society is done through organized groups; and group membership involves opportunities, responsibilities, and the development of leadership. Organized group life of all types must act in accordance with established rules of social relationships and a system of social controls.

Following our silent prayer was an excellent opportunity to bring out, by questioning, how we are being obedient to the Supreme Court ruling regarding prayer in public schools and the constitutional provision for separation of church and state.

8:25–9:15 Sixteen children (Group 2) were working with the student teacher. They were seated around the rug at the front board. This was the faster moving group working in Elementary School Mathematics, Book 5. They were reviewing the subtraction algorithm and experiencing some individual practice in its use.

Ten children (Group 3) were working with the teacher. They were seated around three tables which were pushed together at the back of the room. This was the slower moving group working in Elementary School Mathematics, Book 5. They, too, were reviewing the subtraction algorithm. The smaller group made it possible for more individual participation. Boyd particularly needed encouragement today. He had not understood one step in the assignment and needed assurance that he could understand. Through leading questions he was helped to find his own mistake and regain confidence. The use of large sheets of newsprint and felt pens made the individuals' work visible to all the group.

The other four children (Group 1) in the room were working in Elementary School Mathematics, Book 6. They have four, thirty minute periods a week with the teacher. During the present period two of the group were taking a test on whole numbers. The other two were doing an assignment which would be the basis for discussion during their math period.

Around February 1, a real exciting thing happened in regard to math. Sarah came one day and asked if she could move ahead faster in the fifth grade math in order to catch up with the sixth grade group. It was explained to her that if she wanted to move at a faster pace this would be fine, but that she should not do it with the idea of catching up with the sixth grade group. It was further explained that the sixth grade group was real eager about moving forward and that her objective could be rather deflating.

Sarah left with a clearly defined motive to move forward at her own pace according to the dictates of her own enthusiasm and wisdom. A plan was laid out for drill and for regular tests to check on understanding.

Sixteen children have followed Sarah's example. The greatest thrill came when Boyd asked if he could move ahead at his own pace. Three years ago when the nongraded first started operation Boyd was a very mixed up little boy. He had no respect for himself and consequently none for others or for property. To see him now regulating his own pace is a real thrill.

The picture one views now is quite a different one from that day in November. There are children working individually. There are several small groups of three or four children working together for mutual aid in learning. Finally there are ten children still receiving daily instruction in a very structured situation.

9:15–9:45 24 children from Register 3
2 children from Register 5
1 child from Register 4

This was a Tuesday. On Tuesday and Thursday cursive writing is taught at this time. Today three new letters were introduced: the capital letter T, and two lower case letters, v and k. These were introduced in the word Thanksgiving. In addition to demonstrating on the board much individual help was given. The overhead projector is often used too.

9:15–9:45 9 children from Register 3
13 children from Register 4
1 child from Register 5

On Monday, Wednesday, and Friday this time is devoted to spelling. The test-study method is now in use and this group is using the basal text for fourth grade spelling.

9:45–10:20 3 children from Register 5
1 child from Register 4

These four children were working in Elementary School Mathematics, Book 6. Today we had a variety of word-problem experiences involving time, rate, and distance. They manifested their usual enthusiasm for learning.

10:20–10:35 Break

Today was a beautiful fall day and we went outside. Each child had the opportunity to choose his own activity. No physical education equipment was taken out at this time. Some children organized races. Others played on the available bars. Still others just talked.

10:35–11:20 17 children from Register 3
5 children from Register 4

Children were using S.R.A. Reading Laboratory, 1C. All twenty-two children proceeded at their own rate. Both the teacher and student teacher worked with individuals as instruction was needed.

The children have worked out a system of signalling for help. Each child has a card, black on one side and white on the other. When help is needed a child turns the black side up. This means that no child has to sit waiting for the teacher and waving his hand in the air. He signals and then goes right on with the next task. The teacher can therefore give his undivided attention to instructing the individual child who has asked for help.

To make sure that a child is not tempted to just fill in blanks from the key cards, there are some very definite rules for working.

1. A different child has as his duty each day to erase and initial, with the teacher's initials in red ink, each erasure.
2. No child may erase on his own worksheet.
3. No key card is available to a child until all blanks on the worksheet are filled in.
4. Every worksheet is checked by the teacher to make sure errors are being found and corrected and that there are no uninitialed erasures.

These work rules have helped to create a real learning situation in the use of these fine materials for the individualization of reading instruction.

11:20–12:00 24 children from Register 3

Children were allowed a little time to complete their poems and stories on Thanksgiving. They had worked on these yesterday. Some children wanted to share their writings with the class and did so. A few wished to share their writings with the teacher only.

12:05 Children regroup for lunch.
12:05–12:50 8 children from Register 3
9 children from Register 5
9 children from Register 4

After a child read the menu to the group the teacher read from *The Incredible Journey* by Sheila Burnford. At 12:20 the children went to lunch. The group was organized in order to assume responsibility for a pleasant lunchroom situation and for leaving the tables ready for the next group.

12:50–1:15 24 children from Register 3

Some children were reading quietly to themselves and others were enjoying a browsing period in the library.

1:15–1:45

This timt was substituted for the teacher's regular period away from children. The regular period was used for math instruction for Group 1, Book 6.

The other two teachers of the team were directing the physical education for nongraded group No. 1.

1:45–3:15 24 children from Register 3

Viewed a filmstrip, *Citizenship, Test on Rights and Duties*. This was the basis for an evaluative discussion regarding our depth study *People and Government*. The children were able to state in their own words certain generalizations we'd been working toward. Tomorrow we shall have a written evaluation. On other days this time is used for science. Some days the time is divided between the two areas.

A SELF-CONTAINED FOURTH GRADE

Miss Eleanor Head is an experienced fourth grade teacher who in 1967–68 taught one of the control fourth grade sections. There were two other fourth grade teachers who taught self-contained sections. Planning time available to these teachers was the same as for all teachers in Casis School. These three teachers did much cooperative planning as well as some interchange of pupils in mathematics, as will be described later. Miss Head's official daily schedule was as follows:

8:00—Quiet, self-chosen activities
8:15—Announcements, sharing
8:25—Reading
9:30—Social Studies or Science
10:15—Physical Education
11:00—Mathematics
12:00—Lunch
12:30—Free reading, usually library books
1:00—Planned sharing
1:10—Spelling, handwriting
1:55—Music (2 days), art (2 days)
2:30—Language or study period
3:15—Dismissal

Periodically there are deviations from the above schedule. On rainy days, in order to have access to the gymnasium, physical education comes from 9:00 to 9:20. On Mondays the class watches the science lesson on television at 9:23. Thursdays include a special period in the library, starting at 9:30. Sometimes the schedule has to be adjusted to accommodate a resource speaker or a field trip.

Miss Head's class consists of 16 boys and 15 girls plus a special education pupil who is in Miss Head's room only from 8:30 to 11:00 a.m. One of the other pupils is also enrolled in special education but is assigned to special education only one period per day, from 12:30 to 1:55 p.m.

Initial subgroups in her class during the first month of school were as follows:

Reading:
- Group 1— 7 pupils
- Group 2—15 pupils
- Group 3— 7 pupils
- Group 4— 2 pupils

Spelling:
- Group 1—10 pupils
- Group 2—19 pupils
- Group 3— 1 pupil

Mathematics
- Group 1—12 pupils
- Group 2—10 pupils
- Group 3— 9 pupils

During the first three months of the school year four pupils were moved from a lower to a higher group and one was shifted from a higher to a lower group in reading. In spelling three were moved up and one was moved down, both shifts taking place after the three fourth grade teachers had interchanged pupils.

General Program Features

Reading. The basic reading skills for Grade 4 as outlined in the teacher's edition of *Ventures* were emphasized for all children in Groups 1 and 2. This basal text was completed by midterm and supplementary readers were used during the second semester. The workbook *Uncle Ben* (4th grade level) was used by all pupils in Group 2. Children in Group 1 worked on fifth grade reading skills one day per week and used *Tom Trott,* a fifth grade workbook.

Pupils in Group 3 used *Children Everywhere* as a text since its emphasis is on third grade skills. They also used a third grade workbook, *Funny Bunny.* During the second semester this group should be ready for *Ventures,* the fourth grade text. Group 4 consisted of two pupils for whom individual work had to be planned.

All children in this class read *My Weekly Reader,* Grade 4, once each week. Supplementary activities associated with topics in *My Weekly Reader* are carried out in accordance with pupil interest and teacher time.

Mathematics. After the first few weeks of school in September the three teachers teaching the fourth grade control sections divided the total group of pupils into three sections based on achievement data, each group consisting of about one-third of the total number. This represents a type of horizontal achievement grouping at the same grade level. These three teachers had tried such an arrangement the year before and had sufficient success with it to continue the plan.

These three teachers rotate their assignments to the three reorganized sections every twelve weeks so that each pupil has each teacher for one-third of the school year unless a pupil is shifted from one section to another during the year so that he misses having one of the teachers. During the first twelve weeks Miss Head taught the section highest in achievement and her initial subgroups in this section were as indicated earlier. During the second twelve weeks she taught the section containing the lowest achievers. During October and November, while teaching the highest section, she shifted one pupil from a higher to a lower subgroup and one pupil from a lower to a higher subgroup.

Instruction in the three rearranged sections has many similarities as well as important differences. All three sections follow the sequence of topics provided in the fourth grade text, *Elementary School Mathematics,* but each teacher will vary the emphasis, approaches, and resources in accordance with the needs of pupils. Enrichment materials outside of the text were provided in all three sections but the type of enrichment varied.

Spelling. The plan provides for all pupils in Miss Head's class, with the possible exception of two or three low achievers, to master the words listed in the fourth grade text. The more capable pupils are expected to complete a systematic study of all the words in *Spelling Goals,* Book 5, which is an out-of-adoption speller. In addition to learning words in spelling texts, children are required to correct their spelling errors in written work in all content areas. Special attention is given to learning to spell certain words used frequently in social studies, science, and mathematics.

Social Studies. Primary emphasis will be placed on developing the broad and related generalizations outlined in the *Casis Guide for Social Studies,* 1960. The following depth studies will be used:

(1) Geographic Areas of the World (Natural Environment)
(2) A Study of Grass (Environment Challenges Man)
(3) Netherlands (Environment Challenges Man)
(4) Postal Service (Organized groups)
(5) The Cattle Industry (Understanding the Past)
(6) Life in a Rain Forest (Meeting Basic Needs)
(7) Black Gold (Using a Natural Resource)
(8) Knights and Castles (Cultural Contributions)

At appropriate times during the year the supporting strands described in the *Casis Guide* will contribute to the objectives of the social studies program. For example, two or three "great books" will be read aloud by the teacher and special reports on the "great images" will be given.

The library provides a major part of our materials for the social studies depth studies. We also use the fourth grade text *A Journey through Many Lands* and the workbook *Life in Different Lands,* Grade Level 4 for the first and third studies. The workbook is by Hoffman, Bowden, and Kennamer.

Science. The science exercises described in the AAAS manual *Science—A Process Approach,* Part 5 were used throughout the year. Certain exercises in the list below appear out of sequence due to an experimental project carried on in this fourth grade class during October, November, and December. The sequence we will use is as follows:

(1) Controlling Variables I: Water Movement in Materials
(2) Controlling Variables III: Rolling Cylinders
(3) Controlling Variables IV: Growth of Mold on Bread
(4) Using Numbers XIII: Decimals
(5) Measuring XIV: Measurement of Angles
(6) Interpreting Data II: Precision in Measurement
(7) Inferring VIII: Inference of Patterns in Elecric Circuits
(8) Experimenting I: Conductors and Nonconductors
(9) Predicting VII: Predicting in Various Physical Systems
(10) Communicating XIII: Force and Motion
(11) Measuring XV: Units of Force
(12) Using Time-Space Relations XVII: Rotation and Angular Speed
(13) Defining Operationally II: Analysis of Mixtures
(14) Communicating XII: Selecting Coordinate Systems for Graphs
(15) Inferring IX: Inferring Shapes of Cut Things
(16) Controlling Variables V: Orientation of Plants

We view and discuss the fourth grade television science programs from KLRN once a week.

The Austin Public Schools require a health unit on Growth and Reproduction and a Safety Unit to be taught in all fourth grades. The Safety Unit was taught during the first three weeks of school. The adapted health textbook was used with all pupils. The same text served as a basis for the unit on growth, which will be taught in the spring.

The total time devoted to social studies and science during the year is about the same, though the weekly schedule varies with the activities being carried on.

A Typical Day in November

Before 8:15: The teacher arrived in the classroom between 7:20 and 7:30 and got materials ready for the day's activities. Two children, who had permission in writing to arrive early were in the classroom by 7:30. Seven pupils who were in Spanish, French, or Safety Patrol arrived by 7:45. Other children arrived by 8:15 and, after attending to such routine matters as getting belongings in place, sharpening pencils, and exchanging library books, they began some quiet activity at their desks.

8:15–8:25: The teacher made announcements and the class chairman led in a brief sharing period. Three times during the week the chairman led the class in the pledge of allegiance to the flag.

8:25–9:30: Reading. On Monday, Tuesday, and Wednesday textbooks were used with all groups. The two most advanced groups read an assigned story in *Ventures,* the fourth grade basal text. The teacher made a few explanatory remarks regarding the story and explained a written assignment which she had put on the chalkboard. The assignment included pertinent questions which served as a check on comprehension and four or five words to be studied by using the glossary. The written work was completed during the class period and turned in for the teacher to check. After errors were marked, the papers were returned to the pupils for corrections at a later period.

Those pupils who finished early were instructed to read their library books or find additional information in the classroom encyclopedia about a topic relating to the assigned story. Children who did the extra work shared their information with the class at a later time. Once during the three-day period each child was a part of a smaller group that assembled around the reading table for oral reading and discussion with the teacher.

Group III followed a similar procedure using *Children Everywhere* instead of the basal text. At the end of most of the stories in this easy fourth grade reader, there are exercises which were used as written assignments.

Group IV consisted of two children who worked with Group III for silent reading and group discussions but were unable to do the written work successfully. They read *Roads to Follow,* Grade 3, for independent reading.

On Thursday the entire class used *My Weekly Reader,* Grade 4. The more capable readers were encouraged to seek additional information in the library when the written work in the newspaper was completed. Slow readers were given special help by the teacher. At the conclusion of the period the children were instructed to take the *Weekly Reader* home and read aloud sections of their own choosing.

The SRA reading cards were used on Friday. Each child read from a card suitable to his reading ability and progressed through a color sequence at his own rate. A three-year range of difficulty was indicated by the color of cards used. Children checked their answers and recorded their scores in individual folders kept in the classroom filing cabinet.

9:30–10:15: Social Studies—Science. The depth study *Geographic Areas of the World* was aimed toward increasing the child's understanding of natural environmental factors that affect man's mode of life. Background information dealt with map reading and facts regarding continents, oceans, hemispheres, weather, and climate.

Films, globes, and maps were essential parts of the classroom activities throughout the three periods of the week which were devoted to social studies.

Some children were given reference assignments under the partial direction of the librarian. After we viewed and discussed a film on land elevation and the map color symbols for elevation, a group of children was asked to find the highest point in each continent by using reference books in the library. In the discussion that followed their report, the teacher directed the attention of the group to factors in man's natural environment that affect his mode of life.

Science. We found the AAAS guide for the first science study of the year, *Water Movement in Materials.* The specific objectives were to identify the variables which were manipulated and those which were held constant, and to demonstrate that water moves upward in some materials faster than in others. Teacher information, detailed pupil activities, and evaluative tests are given in the guide. Materials for the investigations were provided by the AAAS office. All children participated in the experimental procedures on two days of the week.

10:15–10:50: Physical Education. The class was divided into four teams, two boys teams and two girls teams with a captain for each team who serves two weeks. The captains, with the help of the teacher when necessary, assumed the responsibility of selecting an appropriate game for a designated play area, organizing and directing the game, and evaluating the performance of his team. Each captain kept a record of his team member's performance and selected his successor on the basis of good sportsmanship.

11:00–11:55: Math. The children in the three fourth grades were divided into three achievement levels. Scores on the Metropolitan Achievement

Tests, teacher made tests, and teacher observation during the first three weeks of school were the criteria for the grouping of children. All three groups used the fourth grade basal text and stayed within the same chapter during the same period of time. At the end of a chapter children were shifted from one group to another if the teacher felt that a change was warranted. Each group engaged in both enrichment and basal activities as deemed appropriate by the teacher.

12:00–12:25: Lunch. Pupil host and hostesses, who change every two weeks, performed appropriate duties in the cafeteria under the supervision of the teacher. Lunchroom standards of behavior were developed by the class and reviewed frequently. Children who forgot lunch money borrowed from the classroom banker who had charge of the fund for that purpose.

12:25–12:55: Children read library books of their own choosing. The library provided cards for each child to keep his own record of books he read.

12:55–1:10: Planned Sharing. Opportunity to share portions of favorite library books was given several times during the week. Also, special reports initiated during the reading or social studies periods were presented at this time. Constructive comments from the group followed each presentation.

1:10–1:55: Spelling-Writing: On Monday the words from the weekly unit in the basal fourth grade spelling text were presented to all pupils except one who worked in a third grade basal speller. A corrected test was given and opportunity provided for pupils to work with words they missed. On Tuesday the children did the written study helps in the text. A trial test, with the dictated sentences from the teacher's guide was given on Wednesday. The same dictated sentences were used again on Thursday for the regular weekly test. During the spelling period on Friday those pupils who needed additional time to work with fourth grade words studied the words they had missed. A group of ten pupils worked with the teacher from an out-of-adoption fifth grade speller. This advanced group had a weekly assignment on which they had worked independently. *Penmanship:* The teacher directed a formal lesson in penmanship for the entire class once during the week. Individual help was given as often as possible during any period in which writing was used. Errors in penmanship were marked on written assignments from all curriculum areas. Correcting these errors provided specific practice with letter forms and other elements of legibility.

1:55–2:30: Music or Art: These subjects were directed by special teachers.

2:30–3:00: Language or Study Period: The basal English text for fourth grade was used once during the week. At other times pupils had opportunity to continue work on assignments from other content areas.

3:00–3:15: The teacher read aloud from one of the "great books" listed as a supporting strand of social studies.

Permeating the activities of each day was a consistent effort on the part of the teacher to capitalize upon those situations which contributed to the emotional and psychological well-being of each child. Children were involved in planning activities they wished to undertake, in cooperative group work as leaders and as followers, in locating and correcting their own errors, and in assuming appropriate classroom duties. Attitudes and values were recognized as essential components of the child's progress.

MODIFICATIONS IN THE OVERALL FOURTH GRADE PROGRAM DURING THE YEAR 1967–1968

Library Instruction: Beginning September 19, 1967 the librarian directed all fourth graders together in a series of eight library lessons, two each week, aimed at developing skill in using the library. The large group assembled in the cafeteria where the overhead projector and individual pupil worksheets were used. These formal library instruction periods were followed by practice in small, informal groups in the library initiated by the homeroom teacher and related to the classroom program. Further implementation of the large group instruction periods was provided through regularly scheduled classes once a week in the library for each fourth grade section throughout the remainder of the year.

Special Interest Groups: On October 18, 1967 we started a series of special interest groups which met once a week for one hour on Wednesday afternoons for ten consecutive weeks and culminated in a Christmas program for parents in which all fourth grade children participated. The pupils in the three fourth grades were permitted to name a first and second choice of the following special activities: choral singing, creative writing, story interpretation, and creative dramatics. Teachers made the final selection of the personnel of each group based as nearly as possible on pupil request. The regular music teacher directed the chorus, and the three fourth grade teachers were leaders of the other three groups.

Reading Skills: In an attempt to provide further for individualizing instruction in basic reading skills, we began on October 20, 1967 to have one lesson a week, a one-hour period each Friday, in which children from the three classes were placed in four groups based on their reading achievement levels. The lowest group used a third grade reading workbook, the two middle groups used a fourth grade reading workbook, and the high group used a fifth grade workbook. A practice teacher directed one of the middle groups. When the practice teacher left during the first week in February, the plan was terminated, and children proceeded to complete their reading workbooks on an individual basis within the homeroom.

Physical Education: A new physical education teacher was added to the staff on January 8, 1968; and the three fourth grades were divided into two sections, boys and girls, with each section getting two forty-five minute periods per week in the gymnasium under the direction of the new teacher. On other other three days, the homeroom teachers alternated in directing the two sections on the playground or in the classroom in rainy weather. This arrangement proved unsatisfactory because of the large number of children in each section which frequently had to be kept in the classroom during the physical education period. At the request of the homeroom teachers, the schedule was charged on February 5th to permit each of the three fourth grade classes to have its own physical education period twice a week in the gymnasium with the special physical education teacher. When the weather was suitable for children to be outside, one homeroom teacher supervised the previously planned activities of two classes. In bad weather each homeroom teacher was responsible for her own pupils on the three days when they were not in the gymnasium.

Math Instruction: The teacher who taught long division to the low math group felt that the children were unable to cope successfully with the material presented in the adopted text. More readiness material was needed and a less difficult sequential plan for presenting the steps in long division, she felt was essential for her class of low achievers. The adopted math textbook was laid aside temporarily and in its place the Winston texts, *The New Exploring Numbers* for both grades 4 and 5 were used. These same books were used for the introductory work with fractions.

A FIFTH GRADE SELF-CONTAINED CLASS

During 1967–68 Mrs. Mary Ann Edwards taught a graded fifth grade section containing 28 pupils, one of whom was classified in special education. Mrs. Edwards is a veteran fifth grade teacher although at times she had taught in other elementary grades. Her class was one of the fifth grade sections used as a control group in the research. Her 28 pupils were equally divided among boys and girls. Planning time available to her, as well as for all teachers in the school, was the same as described in the program for the Nongraded Component II.

During the first month of school each year Mrs. Edwards teaches the class as one large group in all subjects. Her purpose in this is to get across certain uniform routines, work-habits, and classroom management procedures which she wants all students to follow. She feels that these class-as-a-whole procedures enable her to get a personal assessment of each student's performance and needs and to enable the lower achievers to demonstrate their abilities. Much of the first month's work is review.

Grouping in fifth grade sections was handicapped this year because the central office encountered many difficulties in returning the machine-scored achievement and mental test score results. Personnel changes and the death of the director in early fall upset the usual routine so that the fall test results were not available until in December. Hence teacher judgment and test scores from the preceding year had to suffice. Even the latter resources were not available for six of her pupils who were new to Casis School that fall.

In October Mrs. Edwards and another teacher teaching a fifth grade control section intermingled their two classes containing 56 pupils. The combined group was divided into two groups for instruction in mathematics. Mrs. Edwards kept 14 of her lowest achievers and Mrs. Cooley (the other teacher) sent her lowest achievers to Mrs. Edwards. Each teacher thus had about the same number of pupils, Mrs. Edwards the lowest achievers and Mrs. Cooley the highest achievers. The mathematics period was scheduled at the same time in both rooms. Every four to five weeks these two teachers exchange groups so that each pupil had each of the teachers about half of the school year. The two teachers do much cooperative planning. These two teachers had conducted this exchange during the preceding year and had thought it very helpful. It is an example of inter-section achievement grouping at the same grade level.

In November Mrs. Edwards divided her 28 pupils into three subgroups in reading. Group 1 (the highest achievers) contained 11 pupils; Group 2 had 9 pupils; and Group 3 consisted of 8 students. In spelling Mrs. Edwards had no subgroups during the fall months. A few very weak students were excused from the "extra" work list. One child who was extremely weak took the words in a list rather than in sentences, but she used the fifth grade list of words and she took the test with her classmates. Flexibility in subgroup membership was not extensive during the first three months of 1967–68 since only two pupils were shifted from a lower to a higher subgroup in mathematics. No doubt more shifting in subgroup membership took place as the school year progressed, in mathematics as well as in reading.

The official daily schedule in Mrs. Edward's room looks like this:

8:15– 8:45	Opening exercises Announcements News
8:45– 9:05	Spelling
9:05– 9:40	Art on Monday, Thursday Music on Tuesday and Friday Special period in Auditorium on Wednesdays (team teaching with other graded fifth graders with inspirational lesson about Great Images in Social Studies, handwriting, etc.)
9:40–11:30	Language (grammar) Science-Health Social Studies
11:30–12:25	Mathematics
12:30– 1:00	Lunch
1:00– 1:55	Reading and literature Includes special library periods with librarian on Tuesdays for 30 minutes
1:55– 2:35	Physical Education 10 minutes calisthentics 30 minutes organized games On Wednesdays and school day ends at 2:00
2:35– 3:15	Individual work period (catch up time for teacher to make up lessons not completed due to interruptions or for pupils to do work that otherwise becomes homework) Pupils get individual help. SRA cards in charts and graphs. Special projects. Special duties such as library squad and safety patrol.

Reading. Mrs. Edwards used a basal and an individualized reading program. The materials for the individualized portion came largely from the well-stocked central library. The grouping for the basal part was as follows:

Group 1—All pupils in this group read above 6th grade level. As a basal text they use a 6th grade reader entitled *Let's Go Ahead* which is a book purchased privately by Mrs. Edwards so that these advanced readers could work in a text they had not seen before.

Group 2—These pupils read at 6th grade level and are using a new state adopted text called *Vista* which was adopted for the fifth grade. The group was expected to complete this text by midterm or shortly thereafter and then use *Let's Go Ahead*.

Group 3—This group contained some children who read at 5th grade level and some who do not read that well. The text is a very easy, long out of adoption fifth grade book called *On the Trail with Lewis and Clark*. Later in the year some of this group are expected to read *Vista*. This group contains one pupil who is almost a non-reader who attends special classes after school at the Learning Disabilities Center at the University of Texas. The way this group operates, the disability case meets with enough success to be a member of it.

Here is how Mrs. Edwards distributes her own time among these three groups.

	Monday	*Wednesday*	*Friday*
Reading circle with teacher-oral work	Group 2	Group 3	Group 1
Silent reading in assigned material with some written work	Group 3	Group 1	Group 2
Read in library	Group 1	Group 2	Group 3

"In addition to the above reading program the class reads a weekly newspaper *Newstime* which is designed for 5th or 6th grades and has six to ten pages and periodic reading tests. With the entire class I use the text (a former basic text) *Frontiers Old and New* for group instruction in skimming, finding topic sentences, etc. I give speed reading tests from still other old basic texts. We use SRA cards through the year to read charts, graphs, and tables. I plan to have a unit of SRA reading later in the year, at which time I will drop the other program."

Mathematics. How Mrs. Edwards and Mrs. Cooley have grouped their two sections was explained in a preceding paragraph. Here is how Mrs. Edwards described her own part in this two-teacher cooperative arrangement.

"The state adopted text is our curriculum guide and each child works in the fifth grade text. There is enough material in this text to challenge the brightest, without a lot of unnecessary busy work and there is proper material there for a mathematically weak student. I use the library shelf on Mathematics as supplementary enriching materials and get into historical mathematics with brightest students. I make use of the school Arithmetic aid closet materials, supplementary enrichment workbooks, my own collection of aids, visual aids, games, and current materials from newspapers. I also teach this subject all day long as it arises in other subjects."

"This is the subject I teach best because I have so saturated myself with it that I can contract or expand it to fit the circumstances, the group, the mood of the group, the weather, the time of day or season, the need for activity or quiet, the materials at hand, etc. I never plan this class in advance. My plans for the year are to "cover the material in the book" and more importantly, make everyone feel that he can do math and like it."

Here is how Mrs. Edwards manages a typical day.

"Usually the first part of the period is spent in self checking of work assigned the previous day. There is none to check on Mondays. The self checking is important and is accomplished by sample problems worked by children on the chalkboard or overhead. Grades are seldom recorded. Pop quizzes may be given, and occasionally the daily work is taken up to be graded by the teacher. Ideally, this is done in 15 or 20 minutes. The middle third of the period may be devoted to teacher lecture or explanation, discussion, to lead-up activities, to measurement activities even out of doors, to manipulative devices, etc. The last third of the period is devoted to working the assigned pages in the text. The assignment is such that the fastest student cannot quite finish in the time alloted in class. Everyone has until the next day to complete the assignment. Pupils needing individual help get it during the last part of the period or during individual work period or after school."

"On Fridays, so that no work will be assigned over the weekend, the lesson may be worked together or in small groups, or games and puzzles may be used. These extra activities are designed to increase speed, accuracy or other skills in the topic at hand."

Spelling. "I follow to the last detail the method of teaching spelling outlined in the Casis monograph on spelling.[2] I use the printed interscholastic league lists as supplementary for advanced or spellingly talented students. I also use extra lists from language, science and social studies. I never use a supplementary spelling text nor a text from another grade level."

Social Studies. "The currently adopted texts in history and geography are used in their entirety with all members of the class. The non-reader has an arrangement with another child and her mother for reading them to her when she misses the content in class. The library, visuals, and home produced materials supplement this field as do many out of adoption texts. The supply of material is simply too vast to list. We work as a large group, in small groups of many different sizes, individually, and with other fifth grade classes in an ever changing pattern of arrangements in which the main object is to get the job done and to 'get along' with whomever you are supposed to work. We will use an expendable Map Skill booklet. Groupings are made by both choice and chance. I follow as nearly as possible a chronological sequence of topics in Social Studies. The list of topics is the same in the Casis and Austin Public School Guide. Social Studies includes the strands of current affairs, holidays, great books, and images."

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[2] *Spelling Instruction: A Curriculum-Wide Approach.* Austin, Texas: The University of Texas Press, 1954.

Mrs. Edwards handles social studies and relates subjects in a long period from 9:40 to 11:30 a.m. Her own statement reads:

"This long block of time is devoted to English (language other than spelling, reading, and literature), Science, Social Studies, and Health. One topic, such as Social Studies, may appear to take the entire time; but the fields are so interrelated that correlation comes naturally and easily. For example, individual children are giving reports about explorers of the Western Hemisphere. For all appearances here is a lesson in both history and geography. But, for language we are working on skills of enunciation and pronunciation, public speaking, use of microphone, stage posture, listening, taking notes, evaluating, word roots, spelling, and writing and speaking fast. Incidentally, for health and science, a bit of time is devoted to the invention of the astrolabe, navigation by stars, and the problems of scurvy on long sea voyages."

"While some periods are closely correlated, more often the lessons in Language, Science and Social Studies are distinctly separate. I feel free to vary length of periods or change the order so as to sandwich, say, an active science lesson between sedentary language and social studies periods. Most of the health study was completed early in the year and no effort to have a separate science lesson was made at that time. Fifteen or twenty minutes may be given to TV programs. During this period the pupils snack while viewing. The follow-up and previewing activities also come out of this block of time; but the telecasts are so well suited to the classroom activities, they merely enrich what we are already doing." This schedule is:

Monday: 10:23—Wordsmith (language)
Tuesday: 10:38—Libraries (we use on alternate weeks)
Wednesday: 9:23—Science Quest (use when it fits)
Thursday: —None
Friday: 11:03—Art/Music Changing Earth (geography)

"If I wish to work with small groups in any one of these fields, I write assignments on the board, tell each group when I will see them, and permit the individual child to plan his own schedule. This works well for me when groups need time to work on Language or Social Studies in the Library. Class elections, Great Images, and other strands in Social Studies must come from this block of time. Children unable to complete the work at this time have the later work period or finish it at home. It is hoped bright students voluntarily will do additional work out of interest so that they have as much homework as slower students."

Science. "I do as much as I can from the AAAS guide as I am a control group in that study. Since this is a process approach, there is no child's text. In addition to this, I use the TV science series when it is appropriate and I use any adopted texts and other pamphlets or reading materials that I feel are appropriate. We have scientific materials and reading matter available for use on an optional basis at all times. The sequence I follow is that for Level 6 in the AAAS guide. In addition to this I have had the Health unit devised by the Austin Public Schools to include some sex education for fifth grade. We use the entire new Health book that is state adopted. I use a number of resource speakers in science, as well as social studies. My emphasis is on occupations in science. Any grouping in science is for a short period of time and is for the purpose of sharing equipment. I do a considerable amount of individual, private testing, which is really teaching."

Physical Education. Due to the climate in Austin, physical education classes can usually meet out of doors. The outdoor facilities include equipment for physical fitness exercises, three fairly ample play areas, and a 60′ x 60′ cement covered slab. Mrs. Edward's program looks like this:

Monday—10 minutes to do obstacle course
30 minutes to play a game they already know like kickball. We have the use of the backstop area and first turn at the obstacle course.

Tuesday—10 minutes of calisthenics followed by 30 minutes of a game new to fifth graders and so more complicated in skills than that of the previous day. New games are often taught this day. We have the use of a backstop, a large field or the nets.

Wednesday—No formal program.

Thursday—10 minutes of calisthentics followed by 30 minutes of a game using the slab. If the sport on Tuesday has been highly organized, this is often one of low organization and vice versa.

Friday—This is the only day children choose what to play and even so it is seldom free play. Each child on the Friday nearest his birthday plans the period so that most of the year is handled in this manner. Calisthenics included games suited to gym, rope climbing, rhythms, and special P.E. projects and tournaments are worked in on rainy days, before and after school, and occasionally on Wednesdays at the last half hour.

Individual Work Period (2:35 to 3:15 p.m.). This period is set aside for children to use individually to catch up on unfinished tasks, clean desks, perform room duties, go to library or safety guard, help someone some place else if called upon to do so, see movie or filmstrip if this is the time the room is available, tournaments, extra projects, announcements. The trouble with this period is that there are too many left overs to put into it. Do first that which can be done only at school. Take what is left to finish as homework. Also, two children go to special education at this time.

A TEACHER'S PROGRAM—NONGRADED COMPONENT II

Miss Geneva Corder served as chairman in 1967–68 of a 3-teacher team which taught 83 students in a nongraded component. Normally these 83 pupils would be classified as 27 third graders, 29 fourth graders, and 27 fifth graders. Planning time for these three teachers was available for three days before school started in September, every Wednesday afternoon from 2:00 to 5:00 p.m., and from 3:15 to 4:00 p.m. twice a month with student teachers.

Nongraded grouping of pupils was done in mathematics, reading, spelling, language, handwriting, and physical education. Science and social studies were taught with students grouped on a graded basis with Miss Corder teaching the fifth grade class. Music and art were taught by special teachers, each class having two periods per week with the music teacher and two with the art teacher. Nongrading in the subjects named above, plus the use of special teachers in art and music, made this program a semi-departmentalized program with the degree of departmentalization varying widely for different children depending upon which teacher taught them in the nongraded subjects. Some pupils had four different teachers in the course of a week whereas others had as many as five. Each child had at least one of the nongraded subjects with his homeroom teacher as well as the lunch period, social studies, and science. Each homeroom class also had one 30–35 minute scheduled period in the central library each week.

In order to facilitate nongrading, the forenoon schedule was the same for all 83 pupils. It was as follows:

8:15– 8:25—Class organization by homerooms
8:25– 9:15—Mathematics
9:15–10:00—Spelling (Monday, Thursday, Friday)
Language (Tuesday)
10:00–10:10—Break and snacks
10:10–10:55—Reading
10:55–11:35—Physical Education
11:35–11:50—Quiet independent reading and getting ready for lunch (Fifth grade class). All pupils returned to their homerooms at 11:35 but all did not go to lunch at the same time.

The afternoon schedule differed somewhat in the three homerooms due to different lunch, music, and art periods. The fifth grade homeroom afternoon schedule was as follows:

11:50–12:20—Lunch
12:20–12:30—Readiness for afternoon's work
12:30– 1:00—Science
12:30– 1:05—Library (Tuesdays)
1:00– 1:15—Writing
1:15– 1:55—Music or art
1:55– 2:45—Social Studies
2:45– 3:15—Independent study

On Wednesday's the entire school dismisses at 2:00 p.m. to permit a 2-hour planning period for teachers. The three teachers in each of the two nongraded components meet as a group; sometimes the six teachers staffing the two nongraded components meet together. Teachers in the graded sections usually meet in grade level groups during this time.

Grouping in Nongraded Subjects

The reclassification of pupils for instruction in the nongraded subjects was done as soon after the opening of the school year as teachers had had an opportunity to obtain a reasonably accurate index of each child's level of performance in each of the nongraded subjects. The criteria used in grouping were scores obtained on the Iowa Every Pupil Tests the preceding April, the scores on the Metropolitan Achievement Test administered in September, social maturity, September performance in class, and teacher judgment based upon the available information.

The initial grouping resulted in the following distribution, with Group No. 1 always consisting of the most advanced pupils and Group No. 6 representing the least advanced.

Flexibility in subgroup membership is indicated by the number of pupils who were shifted from one subgroup to another. During the first three

Number of Pupils Per Group

Group No.	Math	Spelling	Reading	Language	Writing	P.E.
1	14	5	11	10	6	48
2	17	25	22	15	28	35
3	10	21	21	18	12	
4	10	8	12	12	10	
5	17	14	11	14	14	
6	15	10	6	14	13	

months of the 1967–68 school year one pupil was shifted in reading from his original assignment to the next lower group. In spelling six pupils were shifted to the next higher group and one was moved to a lower group. In mathematics three students were shifted to a higher group and seven were assigned to a lower group.

In the nongraded areas Miss Corder taught Groups 1 and 2 in mathematics, Group 5 and 6 in spelling, Groups 1 and 2 in reading, Groups 5 and 6 in language (2 periods per week), and Groups 1 and 2 in handwriting (one period per week for special skills). Miss Corder taught all but 11 of the 83 pupils in one or more of the above subjects; the other 11 pupils were in the physical education class which she taught. The programs of the other two teachers in this team were equally diversified.

Reading. Miss Corder's class in reading during November consisted of 11 fourth graders and 22 fifth graders who ranged from 5.5 to 10.0 grade equivalents in reading on the Metropolitan test. These 33 pupils were designated as Groups 1 and 2. Group 1 consisted of 11 fifth graders. Group 2 contained 11 fourth graders and 11 fifth graders. The second group was divided into two or more sub-groups from time to time, depending upon the needs of the children and the types of activities provided by the teacher. There were times when each child worked individually and other times when all 33 children worked as a whole class to strengthen common weaknesses or to work cooperatively on a large group project.

Plans for the two groups were similar though it was expected that differences would occur in the quantity and quality of work. The following kinds of reading instruction were stressed: reading skills, vocabulary building, specific skills necessary for the content areas, library and research skills, choral reading, dramatization, poetry, newspaper reading, and a knowledge and appreciation of children's literature.

The kinds of materials used necessarily varied in amount and in difficulty for the two groups and for individual children. The principal kinds of materials used were:

Basal text and supplementary texts (as needed)
Encyclopedias
SRA materials
Library reference guides
Textbooks from other areas
Maps, charts, graphs, globes
Audio-visual materials and equipment of various kinds
Newspapers
Library books, periodicals, and other materials

Mathematics. Miss Corder taught the top achievers in mathematics. The original class was composed of 24 fifth graders and 8 fourth graders. One fifth grader and two fourth graders were unable to work successfully with the group and were transferred to another class. One boy moved to California. The 28 remaining class members were divided into Groups 1 and 2. The ten top fifth grade achievers were designated as Group 1. The six younger children were assigned to Group 2 along with 12 lower achievers of the fifth grade.

The basal text for grade five was issued to all members of both groups, but instruction and content differed. The ten pupils of Group 1 were able to move along at moderate speed, following the text and working with a minimum of supplementary exercises and concrete aids. Since there were six fourth grade children who had not been through the text for that grade level, and review was profitable for the other members of the group, the teacher used the teacher's guides for grade four and grade five in planning her instruction for the group. Concrete aids and supplementary problems were provided for this group. When the student teacher was in the room she worked with Group 1 and the classroom teacher devoted all of her time to Group 2.

Plans for the two groups varied. It was hoped that Group 1 would complete the work for grade five and part of that for grade six. Members will be required to do only the number of practice exercises in the texts that are essential for the mastery of the work presented but need extra work in problems. It was necessary to provide additional problems (word problems) from time to time as the pupils are not as competent as they should be in this respect. Members of Group 2 will be able to complete the basal fifth grade text by the end of the school term, but it is not anticipated that they will progress beyond that point.

Spelling. Miss Corder taught Groups 5 and 6 in spelling. The class comprised 23 pupils, 18 third graders, 4 fourth graders, and one fifth grader, all achieving at beginning third grade level in the fall of the year. Group 5 consisted of 9 third graders, 3 fourth graders, and one fifth grader. These pupils worked comfortably and successfully with third grade materials. The basal third grade speller, supplementary words from written language, and words children misspell in their writing were used with this group. A student teacher worked with these children and the group made a little better than average progress. It is hoped that this group of pupils will be able to do part of the basal text for the fourth grade by the end of the year.

The classroom teacher worked with Group 6 containing 9 third graders and one fourth grader. These children were able to work at third grade level at a slower than average pace. They were unable to do the written exercises in the units without direction or approval of the teacher and needed additional instruction and supplementary word lists in order to master the structural and phonetic generalizations. The basal third grade text, words from the second grade basal text, and supplementary words were given to members of this group. Efforts were being made to enable the children to complete the basal text for grade three. though it may not be possible.

Science. Miss Corder taught science to all fifth grade pupils in this non-graded component. Since the school was involved in the AAS program (the process approach) it was necessary to follow the plans provided for the year's program. These plans are designed for the fifth grade and set forth detailed teaching and testing procedures. The following required exercises are to be presented in the order given.

1. Magnetic Fields—The Nature of the Earth
2. Determining the Direction of True North
3. Effect of Practice on Memorization
4. Using Operational Definitions of Parts of Living Things
5. Effect of Temperature on Reaction Time
6. Variables Affecting Chemical Reactions
7. Mass
8. Forgetting and Relearning
9. Decimals
10. The Push-Rod Box
11. Levers
12. Contour Maps and Three-Dimensional Coordinate Systems
13. Large Numbers, Glurks, and Respiration
14. Meal Worms
15. Growth and Orientation of Plants
16. Moon Photos
17. Probability by Experiment

The science class is composed of 26 fifth grade pupils who are assigned to the same homeroom. The same material is presented to the entire group and the same tests are administered at the conclusion of the exercises. The class is organized into small sub-groups and individual participation is arranged as often as the availability of materials will permit. Occasionally, however, it is necessary to present the work to the whole class and pupils learn by demonstration-observation. During the study of each unit attention was given to vocabulary development and the correct spelling of terms in science.

Social Studies. Miss Corder taught the fifth grade homeroom class in the social studies. The pupils portrayed a wide range in mental ability, reading achievement, conceptual development, and competency in dealing with social studies content and materials; therefore, resources, class organization, and instructional procedures varied considerably from time to time in order to care for the individual differences of pupils.

Both material and human resources were utilized. Basal and supplementary texts served as references for individuals and were used with the whole class only when particular content met common needs. A wide variety of reading materials and audio-visual aids and human resources were employed.

No special pattern of class organization was followed all the time. Pupils worked individually, in pairs, in groups, and as a whole class as occasions and needs arose. Formal instruction by the teacher was employed similarly. Building backgrounds of information and solving problems required constant regrouping of children and diversity of instructional procedures.

The depth study topics were tentative selections for the year's program. Substitutions were made if and when other topics seemed more profitable for the children to study. During each depth study attention was given to vocabulary development, spelling, and the study skills required. Depth study topics were: General review of geographical concepts, The American Revolution, Geography of the United States, Various Climates in the U.S. and their effects on our economy, Our National government, Urbanization in the U.S., Our Latin American Neighbors, and Canada: Our Northern Neighbor.[1]

Physical Education. The three teachers in this nongraded component also group the 83 pupils in physical education. The grouping differs from time to time depending on the type of activity and pupil needs. On a particular day in November there were three groups. Group 1 consisted of 47 pupils but on this day these 47 were taught in two groups. The 26 boys in the group had completed a unit on Deck Volley Ball, using quoits instead of volley balls. The 26 boys made four teams. Two outdoor courts were available and Miss Corder supervised one game while a student teacher supervised the other games. The 21 girls were in the gymnasium with another teacher and a student teacher practicing creative movements done to music. At times the boys and girls play together.

Group 2 consisted of 27 third graders, 5 fourth graders, and 3 fifth graders. On this particular day this group worked with one of the teachers and a student teacher practicing throwing and catching large utility balls. The school as a whole follows a planned physical fitness program.

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[1] For details regarding the social studies program in Casis School, see Clyde Inez Martin, *An Elementary School Social Studies Program; Part I—Components of the Program* and *Part II—The Children's Program.* Austin, Texas: The University of Texas Press, 1963 and 1964.

Language. On Tuesdays and Thursdays, in lieu of spelling, all 83 pupils are grouped for instruction in language. Miss Corder teaches Groups 5 and 6. Group 5 is composed of 14 children. Twelve of the children are in their third year of school, one is a fourth grader, and one a fifth grader. They are able to work much more rapidly than the members of Group 6 and can work more independently both orally and in their written work. The student teacher worked with this group on a given day in November. The topic for the lesson was "Introducing People." The children learned how to introduce a child to a grown person, a man or a boy to a woman or a girl, and a new student to a class. Each child had several opportunities to practice introducing people. The lesson was conducted in dramatization fashion with all pupils participating. The last part of the period the children did written work in their text.

Group 6 contained 14 pupils, all third graders. The fact that they are in Group 6 indicates that they are the lowest achievers. On a given day in November, Miss Corder worked with this group on writing titles for names. The titles with which the children worked were: Mr., Mrs., Miss, Dr., and after the instructional period, the children wrote sentences that included names written with titles. The teacher spelled words for the children, guided their work, and helped them check their papers when they had finished their work.

Writing. Only the fourth and fifth grade pupils were nongraded for instruction in handwriting. Group 1 was composed of 34 children. Six of the pupils wrote nicely and were permitted to use fountain pens or good ballpoint pens in their writing lessons. The remaining 28 children wrote legibly and their work was neat. They worked on words containing letters that they found difficult to make. These letters were k, z, f, y, g, and G, W, Q. Writing books and slant sheets were used by the children during the instructional and practice periods.

Group 2, taught by one of the other teachers, contained 22 fourth and fifth graders. Because these pupils needed highly specific help, they usually spent the period under very careful direction and instruction by the teacher, learning how to hold their pencils, slant their paper on their desks, and sit properly in their chairs. They also worked with words that contained only lower case letters.

All the third graders are making the transfer from manuscript to cursive writing and are taught by their homeroom teacher.

Assembly. Once a week all the pupils in this nongraded component join in an assembly program. Programs vary widely from resource speakers, pupil performances, teacher presentations, student teacher presentations, to television. On a given day in November the three student teachers prepared and presented a program about Albert Schweitzer, one of the Great Images in our social studies strands. They gave an excellent review of Dr. Schweitzer's life, his human qualities, and his contributions to mankind. They used filmstrips, pictures, quotations, and recordings in the presentation. At the conclusion, one very bright eight-year-old boy proceeded to volunteer information about Dr. Schweitzer from a book that he had read.

CHAPTER VI

ANXIETY IN NONGRADED AND GRADED CLASSES

BEEMAN N. PHILLIPS AND GAIL CHANDLER[1]

One of the main hypotheses investigated in this project is that nongraded organization of classes for instructional purposes results in lower school anxiety among children than the usual graded organization of classes. This chapter is devoted first to a discussion of the nature of school anxiety as a psychological construct, and to the relationship that particular school environmental variables, which presumably differentiate nongraded from graded classes, hypothetically ought to have to school anxiety. This is followed by a presentation of the research design employed to statistically analyze the anxiety data, and a discussion of the results obtained and their possible educational and research implications and significance.

THEORETICAL RATIONALE

Anxiety as a psychological construct. Although the term "anxiety" did not gain wide use in the psychological literature until the 1930's, its use today is widespread in psychological theory and research, among professionals in various fields, and among people generally. Since that time a number of major approaches have been taken to the psychological study of anxiety and in a brief examination of these it is helpful to remember that most theories deal with a description of anxiety as a construct, as well as with its antecedents, concomitant, and consequent factors.[2]

Psychoanalytic Theory

Ruebush[3] has commented "Almost everyone agrees that anxiety is an unpleasant feeling state, clearly distinguishable from other emotional states and having physiological concomitants," (p. 461). The "unpleasant feeling state" is typically defined by psychologists as similar to fear. In psychoanalytic literature it is related to the fear inferred to accompany the neonate's ejection from the uterus (cf. O. Rank's elaboration of the concept of birth trauma). Freud,[4] however, distinguished between fear as a rational response to reality (sometimes called "objective anxiety") and both neurotic anxiety, born of intrapsychic conflict between the ego and the id, and moral anxiety, arising from a similar conflict with the superego. On the other hand, psychoanalytic theory does not attempt a specificity of definition that lends itself to easy operationalizing. As Spielberger[5] notes,

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[1] This chapter, which was written by the first author, includes excerpts from the Ph. D. dissertation of the second author (which was completed under the first author's supervision). Dr. Chandler is now at the Herman Adler Zone Center, Department of Mental Health, Champaign, Illinois.

[2] The following sections on "Psychoanalytic Theory," "Learning Theory," and "Trait-State Theory," are taken from pages 6–10 of the second author's dissertation report.

[3] Ruebush, B. E. Anxiety. In H. W. Stevenson (Ed.), *Child psychology Part I.* Chicago: NSSE, 1963. Pp. 460-516.

> the subjective, phenomenological qualities of anxiety—the feeling of apprehensive expectation or dread—were emphasized by Freud, especially in the later formulations, while the physiological-behavioral (efferent) discharge phenomena, although considered an essential part of the anxiety state and an important contributor to its unpleasantness, were of little theoretical interest to him. (p. 9)

Psychoanalytic theory, in fact, is less concerned with describing the condition of the organism in anxiety than with explaining the process whereby the organism comes to this condition. Freud's early hypothesis was that libidinal impulses, failing to find acceptable outlets for expression, are repressed; the repression is virtually automatic and gives rise to a feeling of anxiety. Subsequently, Freud viewed anxiety as itself a cause of repression —as in Little Hans' repression of castration anxiety (Freud, 1925).[6] In this latter formulation the possibility of anxiety serving as a warning signal was emphasized.

Neoanalysts have found the roots of anxiety in parataxic generalization from tense mother-infant transactions (Sullivan, 1953[7]), competitive striving within society (Adler, 1924[8]), or man's pervasive sense of isolation, alienation, and rootlessness (cf. Horney, Fromm). Emphasis within these theories has been upon secondary anxiety, a consequence of threat to defense mechanisms. By contrast, existential psychologists have been concerned with anxiety as "an ontological characteristic of man . . . , the experience of the threat of imminent non-being" (May et al., 1958, p. 50).[9]

[4] Freud, S. *Inhibitions, symptoms, and anxieties.* London: Hogarth Press, 1936.

[5] Spielberger, C. D. Theory and research on anxiety. In C. D. Spielberger (Ed.), *Anxiety and behavior.* New York: Academic Press, 1966. Pp. 3-20.

[6] Freud, S. Analysis of a phobia in a five-year old boy. In *Collected papers of Sigmund Freud, Vol. III.* London: Hogarth Press, 1925.

[7] Sullivan, H. S. *The interpersonal theory of psychiatry.* New York: Norton, 1953.

[8] Adler, A. *The practice and theory of individual psychology.* New York: Harcourt, 1924.

[9] May, R., Angel, E., and Ellenberger, H. F. (Eds.) *Existence: A new dimension in psychiatry and psychology.* New York: Basic Books, 1958.

LEARNING THEORY

In 1950 there appeared an upsurge of interest in anxiety with the publication of R. May's *The Meaning of Anxiety,* O. H. Mowrer's *Learning Theory and Personality Dynamics,* Hoch and Zubin's *Anxiety* and Dollard and Miller's *Personality and Psychotherapy.*[10] The next year saw the publication of Taylor's Manifest Anxiety Scale (MAS) (1951),[11] a tool which was to encourage greater laboratory experimentation in anxiety, thus, in turn, providing even greater interest in the construct. S-R theorists described anxiety in terms of a response which might be either (a) instrumental, leading to the avoidance of pain via activation of physiological mechanisms, or (b) stimulus producing, evoking associated escape behavior (i.e. defense). It was also posited that anxiety was motivationally significant, either as a general energizer (Spence, 1958)[12] or as a learned aversive drive (Dollard and Miller, 1950).[13] In the latter case, pain avoidance was posited as the primary drive and frequently the setting for anxiety was seen as involving conflict between approach and avoidance tendencies. In general, the social learning theorists supported psychoanalytic theory with respect to anxiety's cuing function, the reinforcing effects of reducing drive, and the possibility of inappropriate generalization (displacement). Importantly, it was also demonstrated that where defensive behavior is inappropriate to the task at hand, the approach-avoidance conflict will often result in reduced or faulty learning.

TRAIT-STATE THEORY

Speilberger (1966)[14] has pointed out that "given the conceptual ambiguities in anxiety theory, it is perhaps not surprizing that anxiety research is characterized by semantic confusion and contradictory finding" (p. 12). A major effort to provide empirical clarity is found in the works of Cattell and Scheier (e.g. 1958, 1961)[15] and Speilberger (e.g. 1966, pp. 3–20)[16] himself. Here anxiety as a trait, measurable for example on the MAS, is distinguished from the exhibition of anxiety as a present state. Thus an individual may be said to be anxiety-prone though specific stimuli in individually differing quantities may b[illegible]erequisite for the formation of observable and measurable "state" anxie[illegible].

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[10] May, R. *The Meaning of Anxiety,* New York: Ronald Press, 1950; Mowrer, O. H. *Learning Theory and Personality Dynamics.* New York: Ronald Press, 1950; Dollard, J. and Miller, N. E. *Personality and Psychotherapy: An analysis in terms of learning, thinking and culture.* New York: McGraw-Hill, 1950.

[11] Taylor, J. A. The relationship of anxiety to the conditioned eyelid response. *Journal of Experimental Psychology,* 1951, 41, 81–92.

[12] Spence, K. W. A theory of emotionally based drive (D) and its relation to performance in simple learning situations. *American Psychologist,* 1958, 13, 131–141.

[13] Dollard and Miller, op. cit., Chap. 3.

[14] Speilberger, op. cit., Chap. 3.

[15] Cattell, R. B. and Scheier, I. H., The nature of anxiety: A review of thirteen multivariate analyses comprising 814 variables. *Psychological Reports,* 1958, 4, 351–

MEASURING ANXIETY

The Manifest Anxiety Scale, derived from the Minnesota Multiphasic Personality Inventory, was used originally in connection with a hypothesized generalized drive, though the constructual meaning of the scale remains open to question. Mandler and Sarason (1952)[17] suggested that anxiety may either facilitate task completion or evoke responses irrelevant to the task, i.e., "feelings of inadequacy, helplessness, heightened somatic reaction, anticipations of punishment or loss of status and esteem and implicit attempts at leaving the test situation" (p. 166). The theoretical impact of anxiety in the classroom was made clear and test-related anxiety, a "state" variable, has been measured and discussed at some length by Sarason and his co-workers (cf. especially 1960).[18] More recently, Phillips (1966)[19] has established "school anxiety" as a more comprehensive construct than "test anxiety" for use in studies of classroom behavior.

The nature of school anxiety. An implication of this review is that anxiety reactions depend largely on either external or internal factors, and in the conception of school anxiety which has been developed these alternatives are combined. In the literature, discussions of "objective," "state," and "situational" anxiety tend to emphasize the objectively dangerous and threatening aspects of situations, while discussions of "neurotic," "chronic," and "trait" anxiety tend to emphasize the personality characteristics associated with a disposition or proneness to be anxious. Therefore, school anxiety reflects both a proneness to be anxious and the general stressfulness of school situations. This conception of school anxiety is summarized in Figure 1, and it is the basis of the *Children's School Questionnaire* which was de-

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388; *The meaning and measurement of neuroticism and anxiety.* New York: Ronald Press, 1961.

[16] Speilberger, op. cit., Chap. 3.

[17] Mandler, G. and Sarason, S. B. A study of anxiety and learning. *Journal of Abnormal and Social Psychology*, 1952, 47. 166–173.

[18] Sarason, S. B., Davidson, K. S., Lighthall, E. F., Waite, R. R. and Ruebush, B. K. *Anxiety in elementary school children.* New York: John Wiley and Sons, 1960.

[19] Phillips, B. N. *An analysis of causes of anxiety among children in school.* USOE Cooperative Research Branch, Project No. 2616. Austin: The University of Texas, 1966.

veloped to measure school anxiety in connection with Phillips' work. A number of studies using this instrument have been completed, and these results tend to indicate that school anxiety is multi-dimensional, and that its relations to schooling are complex.[20]

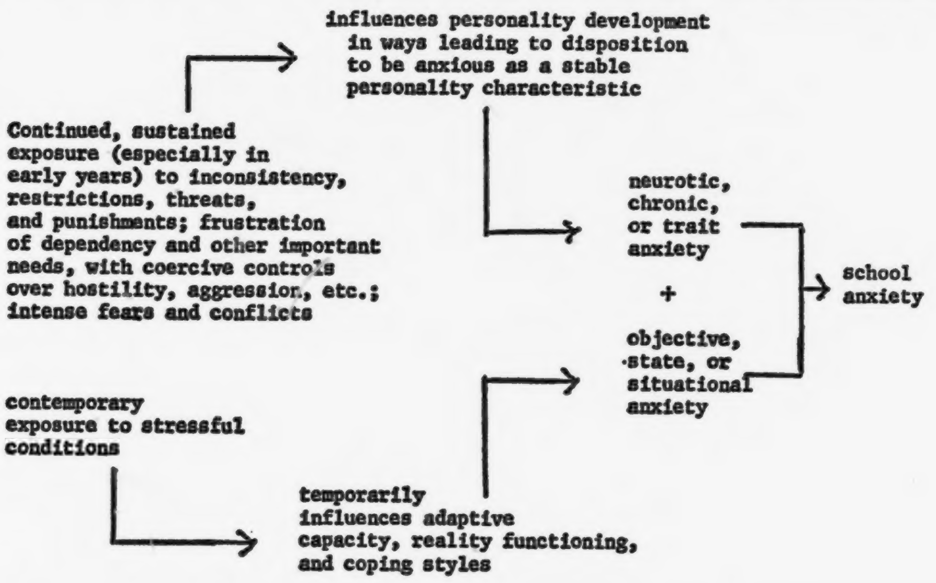
influences personality development in ways leading to disposition to be anxious as a stable personality characteristic
Continued, sustained exposure (especially in early years) to inconsistency, restrictions, threats, and punishments; frustration of dependency and other important needs, with coercive controls over hostility, aggression, etc.; intense fears and conflicts
neurotic, chronic, or trait anxiety
+
objective, state, or situational anxiety
school anxiety
contemporary exposure to stressful conditions
temporarily influences adaptive capacity, reality functioning, and coping styles

FIGURE 1. The nature of school anxiety.

Hypothetical effects of nongraded organization on children's anxiety. Chandler (1969, pp. 25–34) has examined nongraded classroom organization from a psychological standpoint, and has discussed the school environmental variables which presumably differentiate nongraded from graded classes. Nongraded organization was held to lead to three important changes in the classroom environment, and each of these changes should tend to reduce school anxiety, so that nongraded children should become significantly less school-anxious than graded children (if they start out equally anxious). In nongraded classes, pupil assignments, curricular experiences, and evaluations should be more in terms of the individual child's interests and capabilities, so that a relatively greater number of successes and fewer frustrations and failures should be experienced. Furthermore, in nongraded classes the probability of a child's viewing at least one of his teachers as "nurturing" should be enhanced. And finally, nongraded classroom organization should lead to a more diffusely structured peer groups which should provide a greater diffusion of acceptance in peer relationships. As previously noted, one of the anticipated effects of such school environmental changes is a reduced level of school anxiety in nongraded classes, in contrast to graded classes.

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[20] Phillips, 1966, op. cit. Chap. 3; Anxiety as a function of early school experience. *Psychology in the Schools,* 1967, 4, 335–340; The nature of school anxiety and its relationship to children's school behavior. *Psychology in the Schools,* 1968, 5, 195–204; Anxiety in elementary school children. *Childhood Education,* 1968, 44, 340–342; Problem behavior in the elementary school. *Child Development,* 1968, 39, 895–903; (with Gotts, E. E.) The relation between psychometric measure of anxiety and masculinity-feminity. *Journal of School Psychology,* 1968, 6, 123–129; (with Adams, R. L.) Factors associated with under- and over-achievement among socio-economically and racially-ethnically different elementary school children. *Psychology in the Schools,* 198, 5, 170-174.

METHODS AND RESULTS

Design and Analyses of Anxiety Data. The general plan of the overall project has already been described in Chapter 2, and the details presented there will not be repeated. It is necessary, however, to describe the instrument used and to depict certain aspects of the reesarch design which are peculiar to the analyses of the anxiety data. The *Children's School Questionnaire* (CSQ) was administered to pupils in the nongraded (experimental) and graded (control) classes in the fall (shortly after the school year began) of 1965, 1966, 1967, and 1968 by two research assistants. The original (three forms, 198 items) version of the CSQ was administered in the fall of 1965, a shorter two-form (96 items) version of the CSQ was administered in the fall of 1966, and only the first of these two forms was administered in the remaining two years of the project. Since these different versions of the CSQ were administered to all subjects in the project, no systematic bias should have been introduced into comparisons of control and experimental subjects. Of course, the anxiety scores which were analyzed were based on the *same set of anxiety items* for all four schools years, and scores based on this subset of 35 items (out of the total number of 74 anxiety items in the complete CSQ) have a test-retest correlation (a year apart) of .90 with scores based on all of the items.[21]

A schematic representation of the different groups of children in the study, and their progression through the grade levels during the four years of the project, is presented in Figure 2. The number of subjects actually included in the analyses is considerably reduced from the overall number given the CSQ. One basis for this attrition is that repeated measures analyses were employed, e.g. groups 1135, 1146, 1157, and 1168 in Figure 2 include only subjects present at all four of the testing periods. In addition, experimental or control subjects who had for one reason or another missed a regular testing session, entered the program later in the school year, or been inadvertently retested were excluded from analyses since repeated testing, age (grade level), and testing variations can affect scores on instruments like the CSQ. For each group in Figure 2 the first digit in the number refers to nongraded (1) and graded (2), the second digit corresponds to Wave I (1) and Wave II (2), the third digit denotes the grade level (or its equivalent), and the last digit indicates the year of testing. The dotted line indicates an incomplete progression since the 1166 group was not tested in 1966 as sixth graders.

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[21] For additional details on the nature of the CSO see Phillips, B. N. *An analysis of causes of anxiety among children in school.* USOE Cooperative Research Branch, Project No. 2616, Austin: The University of Texas, 1966.

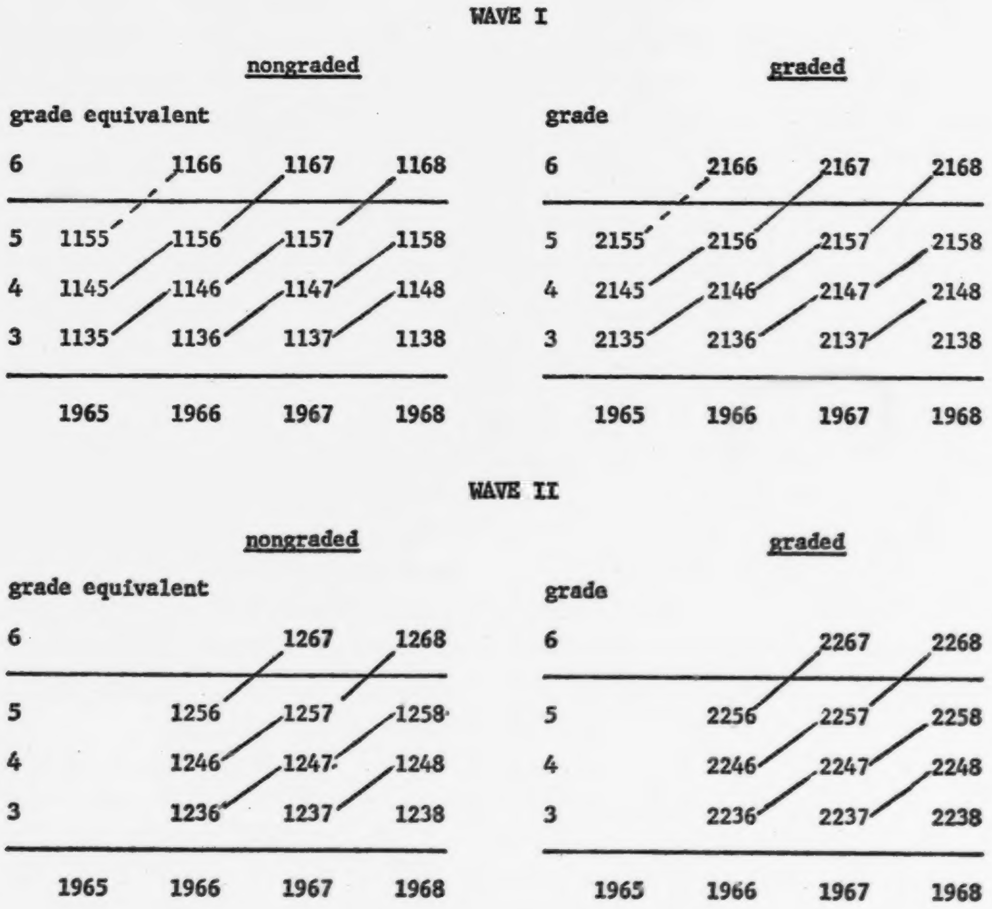
WAVE I
nongraded
graded
grade equivalent
grade
6 1166 1167 1168
6 2166 2167 2168
5 1155 1156 1157 1158
5 2155 2156 2157 2158
4 1145 1146 1147 1148
4 2145 2146 2147 2148
3 1135 1136 1137 1138
3 2135 2136 2137 2138
1965 1966 1967 1968
1965 1966 1967 1968
WAVE II
nongraded
graded
grade equivalent
grade
6 1267 1268
6 2267 2268
5 1256 1257 1258
5 2256 2257 2258
4 1246 1247 1248
4 2246 2247 2248
3 1236 1237 1238
3 2236 2237 2238
1965 1966 1967 1968
1965 1966 1967 1968

FIGURE 2. The progression of subjects through the years of the project. (For numbers of groups: first digit, 1 = graded; second digit, 1 = Wave I, 2 = Wave II; third digit, grade or its equivalent; and final digit, year of testing.

Groups utilized in repeated measures analyses of variance of anxiety scores. With nongradedness versus gradedness as the independent variable, a series of repeated measures analyses of variance were carried out on the anxiety scores. The logical possibilities for such analyses are discernable by the examination of Figure 2, and those actually performed are as follows:

a. Children initially in 3rd grade (or its equivalent) in 1967 who progressed to 4th grade (or its equivalent) in 1968 (i.e. Groups 1137–1148 and 1237–1238 *versus* Groups 2137–2148 and 2237–2248).
b. Children initially in 3rd grade (or its equivalent) in 1966 who progressed to 4th grade (or its equivalent) in 1967, and to 5th grade (or its equivalent) in 1968 (i.e. Groups 1136–1147–1158 and 1236–1247–1258 *versus* Groups 2136–2147-2158 and 2236–2247–2258).
c. Children initially in 3rd grade (or its equivalent) in 1965 who progressed to 4th grade (or its equivalent) in 1967, and to 6th grade in 1968 (i.e. Group 1135–1146–1157–1168 *versus* Group 2135–2146–2157–2168).
d. Children initially in 4th grade (or its equivalent) in 1965 (Wave I) or in 1966 (Wave II) who progressed to 5th grade (or its equivalent) in 1966 (Wave I) or in 1967 (Wave II), and to 6th grade in 1967 (Wave I) or in 1968 (Wave II). That is, Groups 1145–1156–1167 and 1246–1257–1268 *versus* Groups 2145–2156–2167 and 2246–2257–2268.
e. Children initially in 5th grade (or its equivalent) in 1966 who progressed to 6th grade in 1967 (Group 1256–1267 *versus* Group 2256–2267).
NOTE: Anxiety scores were not obtained in Groups 1155–1166 and 2155–2166 when they were 6th graders, so they could not be included in this analysis.

Results of repeated measures analyses of variance. The results of the analyses of variance applied to the foregoing nongraded and graded groups are presented in Tables 28–32. In each of these analyses the results which are directly relevant to the anxiety hypothesis are those for the G by T interactions, since these indicate whether the anxiety scores of the nongraded and graded subjects differed significantly across school years. According to the hypothesis generated earlier, it was anticipated that children experiencing the graded program would become more anxious, or decrease less in anxiety, across the school year(s) than children experiencing the nongraded program. In addition, in order to read the tables one needs the following information:

G mean: 1 = nongraded group, 2 = graded group
T mean: 1 = 1st year tested, 2 = 2nd year tested, 3 = 3rd year tested, 4 = 4th year tested.
G by T: Columns = year tested. Rows = group (nongraded, then graded)

Examining the G by T results in Tables 28–32, only the interaction in Table 28 reaches a satisfactory level of statistical significance (p = .022), and there the results are *opposite* to predictions since the nongraded children *increased,* and the graded children *decreased,* in anxiety. Therefore, these analyses provide no evidence that nongraded classroom organization was superior to graded classroom organization in "remediating" the anxiety of children.

In addition to this finding, brief mention needs to be made of other results in Tables 28–32. Probabilities associated with differences between the G means indicate that overall mean differences in anxiety scores between nongraded and graded subjects are so small in all five analyses as to be easily attributable to chance. However, there are statistically significant differences between the T means (i.e. between years of testing) in Table 31 and 32. In Table 31, there is an increase in mean anxiety score between 1965 and 1966, which corresponds to the changeover from the longer to the shorter version of the CSQ. At the same time, there is another increase between 1966 and 1967 when there was no such instrument change. Further complicating the matter, there is only a small change between 1965 and 1966 among nongraded subjects, but there is a large change for graded subjects. Contrariwise, between 1966 and 1967 there is a large change among nongraded subjects, and only a small change among graded subjects.

TABLE 28

Repeated Measures analysis of variance of anxiety scores of Nongraded (N=37) and Graded (N=39) Subjects who were 3rd graders in 1967 and 4th graders in 1968

Source	Mean Square	D.F.	F–Ratio	P
Total	67.4109	151		
Between	94.1607	75		
Groups	5.2785	1	.055	.8097
Error (G)	95.3618	74		
Within	41.0132	76		
Trials	17.7895	1	.456	.5088
G by T	210.0747	1	5.371	.0218
Error (T)	39.0424	74		
G Mean	1	2		
	16.2703	15.8974		
T Mean	1	2		
	16.4211	15.7368		
G by T	1	2		
1	15.4054	17.1351		
2	17.3846	14.4103		

TABLE 29

Repeated Measures Analysis of variance of anxiety scores of Nongraded (N=34) and Graded (N=38) Subjects who were 3rd graders in 1966, 4th graders in 1967, and 5th graders in 1968

Source	Mean Square	D.F.	F-Ratio	P
Total	57.0180	215		
Between	104.4817	71		
Groups	19.8900	1	.188	.6697
Error (G)	105.6902	70		
Within	33.6157	144		
Trials	2.6435	2	.077	.9252
B by T	23.4721	2	.686	.5097
Error (T)	34.2031	140		
G Mean	1	2		
	13.9412	13.3333		
T Mean	1	2	3	
	13.6944	13.7639	13.4028	
G by T	1	2	3	
1	13.4412	14.0294	14.3529	
2	13.9211	13.5263	12.5526	

TABLE 30

Repeated Measures Analysis of variance of anxiety scores of Nongraded (N=24) and Graded (N=51) Subjects who were 4th graders in 1965 or 1968, 5th graders in 1966 or 1967, and 6th graders in 1967 or 1968

Source	Mean Square	D.F.	F-Ratio	P
Total	54.7391	224		
Between	99.4264	74		
Groups	123.6283	1	1.248	.2669
Error (G)	99.0949	73		
Within	32.6933	150		
Trials	19.0044	2	.574	.5701
G by T	14.1369	2	.427	.6594
Error (T)	33.1351	146		
G Mean	1	2		
	10.8750	12.4641		
T Mean	1	2	3	
	12.5067	11.5200	11.8400	
G by T	1	2	3	
1	11.1250	11.1667	10.3333	
2	13.1569	11.6863	12.5490	

TABLE 31

Repeated Measures Analysis of variance of anxiety scores of Nongraded (N=16) and Graded (N=19) Subjects who were 3rd graders in 1965, 4th graders in 1966, 5th graders in 1967, and 6th graders in 1968

Source	Mean Square	D.F.	F–Ratio	P
Total	74.7698	139		
Between	156.7647	34		
Groups	161.9438	1	1.034	.3178
Error (G)	156.6090	33		
Within	48.2190	105		
Trials	171.8190	3	3.910	.0110
G by T	65.8150	3	1.498	.2186
Error (T)	43.9404	99		
G Mean	1	2		
	10.3281	12.4868		
T Mean	1	2	3	4
	8.4857	11.3714	13.6571	12.4857
G by T	1	2	3	4
1	7.4375	8.3750	14.3125	11.1875
2	9.3684	13.8947	13.1053	13.5789

TABLE 32

Repeated Measures Analysis of variance of anxiety scores of Nongraded (N=22) and Graded (N=37) Subjects who were 5th graders in 1966 and 6th graders in 1967

Source	Mean Square	D.F.	F–Ratio	P
Total	42.9006	117		
Between	61.6528	58		
Groups	234.7999	1	4.006	.0473
Error (G)	58.6152	57		
Within	24.4661	59		
Trials	265.5000	1	12.850	.0010
G by T	.3262	1	.016	.8960
Error (T)	20.6609	57		
G Mean	1	2		
	15.2955	12.3784		
T Mean	1	2		
	14.9661	11.9661		
G by T	1	2		
1	16.7273	13.8636		
2	13.9189	10.8378		

Clearly, an "instrument change" interpretation is not wholly adequate to account for this pattern of variations. Adding to the implausibility of such an explanation, mean anxiety scores in Table 32 decrease between 1966 and 1967, and the amount of decrease is similar for nongraded and graded subjects.

Summary of major results of Chandler's dissertation analyses. A number of prior analyses of the anxiety data, excluding data for 1968 which were unavailable, were made in Chandler's dissertation. From an analysis of pre-scores (i.e. initial anxiety scores of subjects), he was able to identify the effects of sex and age-grades on school anxiety. In general, girls had higher scores than boys, although sex differences in Wave II were not statistically significant, but higher for girls. With respect to differences between age-grades, it can be stated that they were generally nonsignificant, with one exception. For children in Wave I in 1965, school anxiety scores were higher from third to fourth to fifth grade. Finally, repeated measures analyses of variance applied to anxiety scores over a period of two years only (i.e. including 1965, 1966, and 1967 data), and analyses of covariance applied to the 1965 (the "covariate") and 1966 anxiety scores revealed no overall effects of nongradedness versus gradedness on school anxiety.

DISCUSSION

Taken together, these two sets of results are disappointing. But their significance needs to be considered in the light of larger research and educational perspectives. The project utilized a limited range of age-grade levels, only one homogeneous, largely upper middle class school, and a particular measure of anxiety. And, although the research design had many advantages, the inclusion of experimental and control groups within the same school may have led to some compensatory and competitive efforts in the control classes, including possibly the diffusion of nongraded practices.

It is also possible that, despite the sophistication of the teachers, nongraded groups actually did not differ sufficiently in essential practices from graded classes. The history of educational experimentation and innovation, as Miles[22] points out, is replete with examples of the difficulties of effecting actual changes in educational practices.

Finally, there is another observation which is pertinent. Seventy-five years of research efforts aimed at manipulating the tangible aspects of schooling (e.g. class size, instructional organization, etc.) have produced negligible

[22] Miles, M. B. Innovations in education: some generalizations. In M. B. Miles (Ed.), *Innovation in education.* New York: Teachers College, Columbia University, 1964. Pp. 631–661.

results on the amount and quality of school achievement.[23] By implication, this suggests that the intangible aspects of schooling (e.g. teacher expectancies) may be more important in what happens to children in school.

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[23] Stephens, J. M. *The process of schooling, a psychological examination.* New York: Holt, Rinehart and Winston, Inc. 1967. Pp. 71–90.

CHAPTER VII

ACHIEVEMENT IN GRADED AND NONGRADED CLASSSES

BENJAMIN FRUCHTER

Three hypotheses were stated in Chapter 2 projecting that children in nongraded classes would make greater progress than children in graded classes, as measured by standardized achievement tests. The Metropolitan Achievement Test was administered to all pupils in grades 3 through 6 in September 1965 through September 1968. The Iowa Test of Basic Skills was given each year in April to pupils in these same grades in 1966 through 1968. It was hoped that data might become available on the same pupils over a three-year period but since the nongraded component begun in September 1965 contained only twenty-five pupils at the third register (third grade) level, not enough of these pupils were left in this school by September 1968 to make a statistical comparison feasible. Hence, gain in achievement can be reported for only one-year and two-year spans.

In order to give a complete picture of the way in which the achievement data were handled we have included some information which certain readers may think superfluous. Each child was given a code number indicating the year he entered the program. He retained the same number as long as he remained in this school. Each year the child's code number and his grade equivalent in each subject were punched on IBM cards. The cards also identified his placement in the experimental or control classes.

As soon as the IBM cards were available for making the analysis of variance, the following steps were taken. If the comparison was over a one-year period the initial task entailed identifying the pupils who had been present at both testing periods; a separate list was made for pupils in experimental and in control classes. Suppose the comparison was to be made on achievement gains in word knowledge between September 1965 and September 1966. Then the cards representing 1965 scores were separated into a boys stack and a girls stack. The boys stack representing pupils in control classes was arranged from high to low grade equivalent in word knowledge. Points representing upper third, middle third, and lower third were identified. The same procedure was followed in obtaining upper, middle and lower thirds for boys in experimental classes and girls in control and experimental classes.

The next step required that boys in the upper third in experimental classes be matched with boys in the upper third in control classes on the basis of grade equivalent score in word knowledge in September 1965. Comparable matching was then done for boys in middle and lower thirds and for girls in upper, middle and lower thirds. Table 33 illustrates the results of such a matching procedure. The analysis of variance was then performed on the 1966 grade equivalents of these same pupils. Subsequent tables illustrate the computer print-out of the analysis. All other achievement comparisons followed the same procedure, using test data for a preceding administration as the basis for matching pupils and the most recent test data for calculating the analysis of variance. The pupil matching procedure was done separately for each subject area covered in later tables.

TABLE 33

September 1965 Grade Equivalents in Word Knowledge, Metropolitan Achievement Test, of Fourth Register Pupils for Whom the Analysis of Variance Was Calculated on Their September 1966 Grade Equivalents

	Experimental		Control	
	Boys	Girls	Boys	Girls
High	6.6, 6.2, 6.2, 7.1, 6.6	5.9, 7.6, 6.6 5.2, 6.2	7.1, 6.6, 6.6, 6.1, 6.1	5.2, 5.9, 7.6, 6.2, 6.6
Middle	5.4, 5.9, 5.4, 5.4, 5.7	4.5, 4.8, 4.8, 4.3, 4.1	5.4, 5.9, 5.4, 5.9, 5.7	4.8, 4.5, 4.5, 4.5, 4.5
Low	3.6, 3.5, 2.8, 2.7, 2.6	3.7, 3.1, 3.5, 2.5, 3.1	2.8, 2.7, 3.7, 3.1, 2.8	3.8, 2.8, 3.1, 3.1, 2.8

Means:

Experimental—4.9; Control—4.9
Experimental boys—5.0; Control boys—5.1
Experimental girls—4.7; Control girls—4.7

ANALYSIS OF THE METROPOLITAN ACHIEVEMENT TEST RESULTS

Tables 34 through 36 portray the analysis of variance data for three consecutive groups of pupils while they were enrolled in the third register classes. The values for the probabilities and means in the tables are given to four decimal places since they were listed that way in the computer output. It is not intended to imply that distinctions to four decimal places are meaningful and accurate.

Table 34 shows the general form of the analysis; it is basically a 2 x 2 x 3 design in which two groups, two sexes, and three levels are represented.

The analyses were set up so that there would be fifteen boys and fifteen girls in each of the experimental groups and fifteen boys and fifteen girls in each of the control groups. Departure from these sample sizes due to attrition as the program progressed are noted in the footnotes. The design was kept orthogonal for all analyses by randomly eliminating cases where necessary to equalize cell sizes.

Tables 34, 35, and 36 show the results for the analyses of variance that were made on the fourth register classes that were tested on the Metropolitan Achievement Test one year after their initial testing. The entries in the tables are the probabilities associated with the F-ratios which were computed for each source of variation using the mean-square within as the error term in the denominator. It will be observed that for the group that was in the fourth register during 1966–67 (Table 34) that there were no differences significant at the .05 level on any of the MAT subscores. Significant results with regard to sex will not be discussed since they were not a major concern of the study. Significant interactions between teaching method and sex or achievement level will be pointed out and discussed. None of the interactions with teaching method were significant in the comparisons made.

TABLE 34

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1965 and Were Tested in Sept. 1965 and in Sept. 1966 and Were in the Fourth Register during 1966–67*

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.6665	.1882	.7788	.8417	.5771
B. Boys vs Girls	.2894	.9536	.6683	.0002[a]	.0058[c]
C. Level (High, Middle, Low)	.0001	.0003	.0000	.0001	.0005
D. A by B	.5644	.7335	.8377	.5720	.7181
E. A by C	.6270	.3622	.7185	.5268	.2435
F. B by C	.3828	.6834	.7120	.0579[b]	.1927
G. A by B by C	.6127	.2595	.2549	.1043	.8349

[a] Means: Boys—4.7111; Girls—4.1556.

[b] Means for boys in high experimental group exceeded girls in high control group by .8000; boys in middle experimental group exceeded girls in control group by .7167; in the low group boys exceeded girls by .1500.

[c] Means: Boys—5.2889; Girls—4.6444.

In the results for the group that was in the fourth register in 1967–68, shown in Table 35, there is a significant difference between the teaching

TABLE 35

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1966 and Were Tested in Sept. 1966 and in Sept. 1967 and Were in the Fourth Register during 1967–68*

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.0796	.8701	.0339[d]	.1445	.7925
B. Boys vs Girls	.0204[a]	.0766	.0041[e]	.5030	.0261[f]
C. Level (High, Middle, Low)	.0000	.0000	.0000	.0000	.0000
D. A by B	.2017	.7029	.8212	.7215	.8149
E. A by C	.0163[b]	.2998	.5739	.0658	.6174
F. B by C	.2039	.0030[c]	.2779	.6157	.2747
G. A by B by C	.1924	.3514	.5959	.2588	.5035

[a] Means: Boys—6.2433; Girls—5.7833.

[b] Experimental high and middle groups scored higher than the comparable control groups; the low control group scored higher than the low experimental group.

[c] Boys in high and middle groups scored higher than girls in comparable groups; girls in the low group scored higher than boys in the low groups.

[d] Means: Experimental—5.1800; Control—5.5067.

[e] Means: Boys—5.5733; Girls—5.1133.

[f] Means: Boys—4.9233; Girls—4.4267.

methods for the Spelling subtest; reference to the footnote in the table indicates that the control group obtained a higher mean score than the experimental group. There is also a significant interaction between teaching method and previous achievement level for the Word Knowledge subtest. In this instance, the footnote indicates that the "experimental high and middle groups scored higher than the comparable control groups; the low control group scored higher than the low experimental group." For the group that was in the fourth register during 1968–69, (Table 36), there are significant differences between teaching methods on the Word Knowledge, Spelling, and Arithmetic Problems subtests of the MAT. In each of these cases, the mean for the control group was higher than the mean for the experimental group. None of the F-ratios for interaction reached the .05 level of significance.

Inspection of Tables 37 and 38 indicates that when the comparisons were made between the conventional and nongraded groups for students entering the program in the fourth register and who were tested at the beginning of that year and also one year later, differences between the two teaching methods on the subtests of he MAT were not significant. For the group that was in the fifth register during 1967–68, a significant inter-

TABLE 36

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test Scores for Pupils Who Entered the Program in September, 1967 And Were Tested in Sept. 1967 and in Sept. 1968 and Were in the Fourth Register during 1968–69[a]

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.0003[b]	.6563	.0411[e]	.0913	.0034[g]
B. Boys vs Girls	.0496[c]	.0098[d]	.0877	.0002[f]	.0158[h]
C. Level (High, Middle, Low)	.0000	.0001	.0020	.0001	.0000
D. A by B	.5175	.2576	.5591	.9147	.1090
E. A by C	.0677	.6238	.1951	.0559	.0907
F. B by C	.0860	.6253	.5923	.1066	.0628
G. A by B by C	.9801	.8563	.2510	.7425	.0089

[a] Analysis based on 1968 scores with 15 boys and 15 girls in experimental group and 15 boys and 15 girls in control group; experimental boys matched separately in each subject area with control boys on the basis of 1967 grade equivalents; girls matched similarly.

[b] Means: Experimental—5.2600; Control—6.0867

[c] Means: Boys—5.4733; Girls—5.8733

[d] Means: Boys—4.8033; Girls—5.3733

[e] Means: Experimental—4.9833; Control—5.7333

[f] Means: Boys—4.1400; Girls—4.7067

[g] Means: Experimental—4.4400; Control—4.9667

[h] Means: Boys—4.4933; Girls—4.9133

TABLE 37

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1965 and Were Tested in Sept. 1965 and in Sept. 1966 and Were in the Fourth Register during 1966–67

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.9800	.3013	.6376	.5762	.6470
B. Boys vs Girls	.0026[a]	.1114	.5949	.0544[b]	.0427[c]
C. Level (High, Middle, Low)	.0000	.0000	.0001	.0005	.0000
D. A by B	.5356	.7505	.7898	.9033	.7519
E. A by C	.5521	.7431	.7994	.6699	.2999
F. B by C	.0828	.3789	.5780	.5717	.0144[d]
G. A by B by C	.8100	.7880	.1036	.5721	.2496

[a] Means: Boys—8.3111; Girls—6.6556.

[b] Means: Boys—5.5222; Girls—5.1444.

[c] Means: Boys—6.3111; Girls—5.8667.

[d] Boys in high experimental group exceeded girls in high control group by .9667; boys in middle experimental group exceeded girls in middle control group by .8667; in the low group girls exceeded boys by .5000.

TABLE 38

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1966 and Were Tested in Sept. 1966 and in Sept. 1967 and Were in the Fifth Register during 1967–68*

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.5968	.8070	.1240	.9710	.5288
B. Boys vs Girls	.5649	.6399	.1167	.5258	.0536[b]
C. Level (High, Middle, Low)	.0000	.0013	.0002	.0004	.0001
D. A by B	.5133	.3012	.6308	.6089	.9308
E. A by C	.3675	.5623	.0649[a]	.3508	.2947
F. B by C	.9276	.5052	.5283	.5103	.2518
G. A by B by C	.7852	.3330	.0640	.1961	.1936

[a] Experimental high and low groups scored higher than comparable control groups; middle control group scores exceeded those of middle experimental group.

[b] Means: Boys—5.9056; Girls—5.5111.

action was obtained between teaching method and previous achievement level on the Spelling subtest. Reference to the footnote in Table 38 indicates that "the experimental high and low groups scored higher than the comparable control groups; middle control group scores exceeded middle experimental group scores." For the group that entered the program in the

TABLE 39

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Test for Pupils Who Entered the Program in Sept. 1966 and Were Tested in Sept. 1966 and in Sept. 1967 and Had Entered the Sixth Register in Sept. 1967*

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.5457	.9345	.3010	.5641	.0014[b]
B. Boys vs Girls	.6009	.0505[a]	.6806	.1866	.0629
C. Level (High, Middle, Low)	.0000	.0003	.0000	.0112	.0011
D. A by B	.6656	.6392	.8846	.2154	.0016[c]
E. A by C	.9059	.9936	.8913	.5388	.2752
F. B by C	.8011	.3018	.8987	.6101	.3023
G. A by B by C	.0608	.6989	.2405	.0441	.6332

[a] Means: Boys—7.7889; Girls—8.6333.

[b] Means: Experimental—7.5667; Control—6.5222.

[c] Experimental boys exceeded control boys by 2.0778; scores for experimental and control girls were identical.

TABLE 40

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1965 and Were Tested in Sept. 1965, and in Sept. 1967 and Who Were in the Fifth Register during 1967–68*

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.2815	.6271	.0888	.8269	.3290
B. Boys vs Girls	.7360	.6058	.9861	.2440	.0443[c]
C. Level (High, Middle, Low)	.0836	.0001	.0867	.0246	.0247
D. A by B	.0774	.0547[a]	.7314	.8828	.2094
E. A by C	.5889	.1090	.1016	.5124	.5250
F. B by C	9278	.0375[b]	.1434	.5655	.0842
G. A by B by C	.8563	.2443	.5550	.2622	.6273

[a] Experimental boys exceeded control boys by 1.2500; control girls exceeded experimental girls by .4834.

[b] Girls in high control group exceeded boys in high group; boys in middle and low groups scored higher than the girls.

[c] Means: Boys—6.4250; Girls—5.8083.

TABLE 41

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Metropolitan Test for Pupils Who Entered the Program in Sept. 1966 And Were Tested in Sept. 1966, and in Sept. 1968 And Were in the Fifth Register in 1968–69*[a]

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.0633	.6824	.6873	.6656	.5152
B. Boys vs Girls	.1024	.2309	.5275	.3117	.0023[c]
C. Level (High, Middle, Low)	.0000	.0000	.0001	.0002	.0000
D. A by B	.7677	.6577	.7195	.0191[b]	.8511
E. A by C	.2295	.2793	.7364	.6630	.2815
F. B by C	.6334	.9099	.5846	.9116	.7127
G. A by B by C	.0894	.5731	.3632	.1763	

[a] Analysis based on 1968 scores with 12 boys and 12 girls in experimental group and 12 boys and 12 girls in control group; experimental boys matched separately in each subject area with control boys on the basis of 1966 grade equivalents; girls matched similarly.

[b]

	Experimental	Control
Boys	6.0167	5.4000
Girls	5.4083	5.6583

[c] Means: Boys—6.5917; Girls—5.8000

fifth register and were tested at the beginning of that year and one year later, a significant difference between teaching methods was obtained for the Arithmetic Problem subtest (Table 39), with the nongraded group scoring higher than the control group. Also, a significant sex by method interaction was obtained for the Arithmetic Problems score with the "experimental boys' mean exceeding control boys' by 2.0778; those for experimental and control girls being identical."

Thus, in general, it can be concluded that there was not a clear-cut difference in the achievement results for the students after one year of the program, and the significant differences that were obtained tended to be in the direction of favoring the control group.

The results after two and three years in the program were similar. Inspection of Tables 39, 40, and 41 indicates none of the comparisons for teaching methods or for interactions with teaching methods attained significance at the .05 level.

TABLE 42

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Metropolitan Achievement Test for Pupils Who Entered the Program in Sept. 1965 and Were Tested in Sept. 1965, and Sept. 1967 and Had Entered the Sixth Register in Sept. 1967–68

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.0670	.1467	.7153	.3240	.7351
B. Boys vs Girls	.5846	.5495	.9861	.5517	.3025
C. Level (High, Middle, Low)	.0000	.0000	.0007	.0002	.0000
D. A by B	.5237	.0965	.1524	.0809	.0974
E. A by C	.2800	.1357	.7418	.8771	.5937
F. B by C	.0382[a]	.0105[b]	.0085[c]	.1123	.0891
G. A by B by C	.7989	.8866	.1751	.3493	.3827

[a] Boys in middle group outscored the girls; girls in low group outscored the boys.

[b] Boys in high and middle groups outscored the girls; girls in low group outscored the boys.

[c] Girls in high and low groups outscored the boys; boys in middle group outscored the girls.

Basic Skills Results

The analyses of the results of the Iowa Test of Basic Skills were set up similarly to those for the achievement scores with matching being done on the basis of scores on the corresponding test at the beginning of the program. The major difference in obtaining the data was that the Iowa Test was administered in April, toward the end of each school year. Inspection of results in Tables 43 through 47 indicates that there were no significant differences at the .05 level for any of the scores of the Iowa Test of Basic Skills whether the program was begun in fourth or fifth register or the comparison was made after one or two years in the program. One of the interactions, that between teaching method and level on the same test one year previously was significant for the Study Skills Total score of the group that was in the fourth register during 1966–67, (Table 43). In this analysis, the "high experimental group exceeded the high control group by .4500; middle control group exceeded middle experimental group by .5667; and low control group outscored low experimental group by .4167," as stated in the footnote. Inspection of Table 44 indicates a significant interaction between teaching method and level for the Word Knowledge subscore. In this analysis "the experimental high group score exceeded the control high group score by .47; the control low group score exceeded the experimental low group score by 1.05; middle level groups differed by only .04 mean score." Also a significant triple interaction between teaching method, sex

TABLE 43

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Iowa Test of Basic Skills for Pupils Who Entered the Program in Sept. 1965 and Were Tested in April 1966 and in April 1967 and Were in the Fourth Register during 1966–67

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Total	Study Skills Total
A. Experimental vs Control	.8390	.6627	.6579	.2401	.2410
B. Boys vs Girls	.6828	.7445	.1682	.2613	.0143[c]
C. Level (High, Middle, Low)	.0023	.0000	.0000	.0004	.0023
D. A by B	.6199	.6225	.0982	.1685	.8768
E. A by C	.9493	.6480	.2670	.7988	.0205[d]
F. B by C	.0877	.0282[a]	.0224[b]	.3052	.2101
G. A by B by C	.3455	.0942	.1768	.8326	.8060

[a] Boys in middle exceeded girls by .8000; in the low groups girls outscored boys by .4500.

[b] Girls in high groups outscored boys by .5000; boys in middle groups outscored girls by 1.0666; boys also outscored girls in low groups by .3000.

[c] Means: Boys—6.2000; girls—5.8111.

[d] High experimental group exceeded high control group by .4500; middle control group exceeded middle experimental group by .5667; and low control group outscored low experimental group by .4167.

TABLE 44

Probabilities for F *ratios, Analysis of Variance (Matched Group Design), Iowa Test of Basic Skills for Pupils Who Entered the Program in Sept. 1966 and Were Tested in April 1967 and in April 1968 and Were in the Fourth Register during 1967–68*[a]

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.6712	.1935	.1724	.5306	.6456
B. Boys vs Girls	.7421	.0056[c]	.0152[e]	.0652	.5822
C. Level (High, Middle, Low)	.0000	.0000	.0000	.0000	.0000
D. A by B	.6522	.6033	.7698	.8531	.6456
E. A by C	.0044[b]	.5061	.2414	.5984	.7403
F. B by C	.2935	.0130[d]	.0741	.0658	.5319
G. A by B by C	.3416	.5953	.8263	.1098	.3707

[a] Analysis based on a sample of 15 boys and 15 girls in the experimental group and 15 boys and 15 girls in the control group; experimental boys matched with control boys on the basis of 1967 grade equivalent scores; girls matched similarly.

[b] The experimental high group score exceeded the control high group by .47; the control low group score exceeded the experimental low group by 1.05; middle level groups differed by only .04 mean scores.

[c] Means: Girls—6.2633; Boys—5.7900.

[d] Girls in high and low control groups exceeded boys in these groups; middle groups were the same.

[e] Means: Boys—5.7233; Girls—6.1533.

and level on the preceding score of the Word Knowledge subtest was obtained for the group which was in the fifth register in 1966–67, (Table 45). In general, the results from the basic skills analyses confirm the conclusions from the achievement analyses that the results do not differ significantly whether the conventional or nongraded method of class organization is utilized.

TABLE 45

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Iowa Test of Basic Skills for Pupils Who Entered the Program in Sept. 1965 and Were Tested in April 1966 and in April 1967 and Were in the Fifth Register during 1966–67

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Total	Study Skills Total
A. Experimental vs Control	.9164	.5610	.3241	.6420	.8400
B. Boys vs Girls	.5716	.0074[b]	.0101[e]	.5542	.0081[g]
C. Level (High, Middle, Low)	.0000	.0000	.0001	.0000	.0000
D. A by B	.5868	.2991	.5942	.9140	.2003
E. A by C	.1312	.0349[c]	.0761	.8031	.3248
F. B by C	.5063	.0280[d]	.0517[f]	.1575	.0053[h]
G. A by B by C	.0347[a]	.6331	.9920	.9127	.1513

[a] Probably due to wide difference in levels.

[b] Means: Boys—7.0389; Girls—6.4278.

[c] High control group outscored high experimental group by .7666; low control group outscored low experimental group by .3500; middle experimental group outscored middle control group by .6167.

[d] Explained by b and c.

[f] Boys in high and middle groups outscored the girls.

[g] Means: Boys—7.5167; Girls—7.0278.

[h] Boys outscored girls in high and middle groups; girls scored higher than boys in low groups.

TABLE 46

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Iowa Test of Basic Skills for Pupils Who Entered the Program in Sept. 1966 and Were Tested in April 1967 and in April 1968 and Were in the Fifth Register in 1967–68[a]

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.9157	.7808	.5484	.7283	.1025
B. Boys vs Girls	.3057	.6713	.0454[b]	.5800	.6529
C. Level (High, Middle, Low)	.0000	.0001	.0002	.0001	.0001
D. A by B	.8489	.3158	.5276	.5308	.5008
E. A by C	.9333	.9144	.1773	.5781	.9591
F. B by C	.9046	.1073	.3693	.7758	.9171
G. A by B by C	.8466	.5596	.1806	.9007	.5338

[a] Analysis based on a sample of 9 boys and 9 girls in the control group and 9 boys and 9 girls in the experimental group; experimental boys matched with control boys on the basis of 1967 grade equivalent scores; girls matched similarly.

[b] Means: Boys—6.5056; Girls—7.2167.

TABLE 47

Probabilities for F ratios, Analysis of Variance (Matched Group Design), Iowa Test of Basic Skills for Pupils Who Entered the Program in Sept. 1965 and Were Tested in April 1966 and in April 1968 and Were in the Fifth Register during 1967–68[a]

Comparisons	Word Knowledge	Reading	Spelling	Arithmetic Computation	Arithmetic Problems
A. Experimental vs Control	.1500	.5281	.1112	.5850	.7929
B. Boys vs Girls	.2660	.6390	.8351	.2600	.0214[b]
C. Level (High, Middle, Low)	.0136	.0098	.0021	.0044	.0033
D. A by B	.1603	.5405	.5784	.3157	.8413
E. A by C	.8719	.5548	.9535	.5224	.3114
F B by C	.5214	.8840	.9811	.5649	.7741
G. A by B by C	.8699	.5322	.5338	.2352	.7499

[a] Analysis based on a sample of 6 boys and 6 girls in the experimental group and 6 boys and 6 girls in the control group; experimental boys matched with control boys on the basis of 1966 grade equivalent scores; girls matched similarly.

[b] Means: Boys—7.2417; Girls—6.5750.

CHAPTER VIII

SUMMARY AND ISSUES

HENRY J. OTTO

In this monograph the authors have endeavored to provide a rationale of nongradedness as a background for the research, a reasonably adequate description of the setting in which the research was conducted, an enumeration of controlled and uncontrolled variables, as well as the findings of our research. There remains the task of an overall summary of the study and a discussion of the issues inherent in research in this area. The reader is warned again to realize that the study was conducted in a specific setting and that our findings might have been different if another setting with its unique environment had been used.

We hope the reader will appreciate the tabular summary of our findings which follows. An "E" in the tabulation means that experimental classes were favored in the findings; a "C" means that the control groups were favored; an "X" means no difference between experimental and control data or that the results were inconclusive.

Hypotheses	Hypothesis	
	Accepted	Rejected
1. There is no difference between experimental and control classes in the total number of minutes per week scheduled as the official period for instruction in:		
a. Reading (Exp.—210 min; Control—237 min.)	....	C
b. Spelling	X	....
c. Arithmetic (Exp.—250 min.; Control—280 min.)	....	C
2. Teachers in experimental classes will devote a smaller percentage of instructional time to a class-as-a-whole activities than teachers of control classes in:		
a. Reading (Exp.—5%; Control—24%)	E	....
b. Spelling (Exp.—28%; Control—62%)	E	....
c. Arithmetic (Exp.—56%; Control—70%)	E	....
3. Teachers in experimental classes will devote less time to helping individuals before and after school than teachers of control classes in:		
a. Reading (Exp.—7 min.; Control—0 min.)	....	E
b. Spelling (Exp.—6 min.; Control—22 min)	E	....
c Arithmetic (Exp.—22 min.; Control—37 min.)	E	....
4. Experimental classes will use a wider range of current state adopted texts than control sections in:		
a. Reading	....	C
b. Spelling	E	....
c. Arithmetic	E	....

	Hypothesis	
Hypotheses	Accepted	Rejected
5. In reading experimental classes will use a wider range of supplementary texts than control classes.	----	C
6. Experimental classes will use a wider variety of individualized learning materials than control classes in:		
a. Reading	X	X
b. Spelling	X	X
c. Arithmetic	----	C
7. Experimental classes will use more teacher-prepared learning materials than control classes in:		
a. Reading	----	C
b. Spelling	----	C
c. Arithmetic	----	C
8. Children in experimental classes borrow more books from the school library than children in control classes.	----	X
9. Children in experimental classes make more use of the school library for reference work than children in control classes	----	X
10. Teachers in experimental classes rely more heavily on achievement test data and less on personal-social needs data in forming subgroups than teachers of control classes in:		
a. Reading	----	E
b. Spelling	----	E
c. Arithmetic	----	E
11. The nongraded components have more subgroups than comparable contingents of control classes in:		
a. Reading	----	C
b. Spelling	----	X
c. Arithmetic	E	----
12. Subgroups in each nongraded component contain fewer pupils than subgroups in control classes.	---	C
13. Subgroups in experimental classes portray a narrower range in achievement as measured by standardized tests than subgroups of control classes in:		
a. Reading	----	C
b. Spelling	E	----
c. Arithmetic	----	X
15. Children in a nongraded program for more than one year will decrease in school anxiety while children in a graded program will increase in school anxiety as they progress through comparable years in school.	----	C
16. Children in the nongraded program will experience greater mean gain in achievement each year in each subsection of the Metropolitan Achievement Test than children in the graded classes.	----	X
17. Children in the nongraded program will experience greater mean gain in achievement each year in the		

	subsection of the Iowa Test of Basic Skills than children in the graded classes.	....	X
18.	**The differential in mean achievement, as measured by the two standardized tests used, favoring the pupils in nongraded classes will be greater after two years in the program than it was after one year in the program.**	....	X

On the basis of the above summary it seems safest to conclude that the comparative data of this study resulted in a draw. The tabulation contains 36 comparisons. Of this number 14 favored the nongraded program; 11 favored the graded classes while 11 comparisons resulted in identical ratings for experimental and control groups or the findings were inconclusive. As one examines the comparisons dealing with resources used, children's use of the library, and grouping practices one probably should not have expected important differences to appear in a school in which over a period of years teachers had made extensive efforts to adapt instruction to individual differences.

As stated earlier, the authors were disappointed that the school anxiety and achievement data came out as they did. We had expected children's school anxiety to be less in a nongraded program and to decrease over the years as children continued in the nongraded arrangement. Our data turned out to show just the opposite on both counts. It may be that our findings merely reflect the intangibles which prevail in the kind of program this school has had over many years in which concern for individual differences, the absence of a comparative marking system, and individual teacher-parent conferences as the salient feature of the reporting-to-parents plan have contributed positively to children's mental health in spite of some parents' pressures on their children for high academic performance. Here one must recall the nature of the clientele served by this school. It is possible that when children were placed in a nongraded program which parents recognized as an innovation designed to give their children a better chance for maximum continuous progress the result was more pupil-felt pressure and therefore greater school anxiety. We do not know.

Perhaps we should have expected the achievement comparisons to come out as they did. After all, when an entire school for years has put forth much effort to adapt instruction to individual differences, what can you expect a nongraded program to add?

Other Research

Although some unsystematic efforts to evaluate nongradedness were reported before 1959 the more systematic studies appeared in journals and doctoral dissertations after 1958. In 1967 William P. McLoughlin published an analysis and summary of 34 studies which had become available between 1958 and 1966.[1] Without going into all the detail provided in his monograph we quote only his summary statements from each section of his analysis. In the area of reading (21 studies analyzed) he concluded ". . . it cannot be claimed that nongrading makes a significant difference in the general reading attainment of children (p. 16)." In arithmetic (15 studies analyzed) he said, "Given these data, it would be difficult to develop an uncontestable argument for the positive influence of nongrading on the arithmetic attainments of children (p. 18)." In the language arts area (10 studies) he concluded, "These data hardly attest to the unquestioned superiority of either organizational pattern (p. 18)." Total achievement was considered in 8 reports; his concluding comment was, "Total achievement scores, too, fail to discern differences between the performance of graded and non-graded classes (p. 18)." Eight studies included measures of student adjustment; his summary statement is, "But no matter how adjustment is defined or measured, there is scant evidence to support the contention that it is improved by attending a nongraded school (p. 19)." When comparisons of pupil achievement in graded and nongraded programs were made in terms of three ability levels (6 studies made such comparisons), McLoughlin found, "The predominant finding of the research in this area is that there are no significant differences in the scholastic achievements of children of varying abilities resulting from attending nongraded schools. Where exceptions to this generalization occur the differences tend to favor the *average* and *below average* child from graded classes (p. 24).

McLoughlin also commented on the quality and inadequacies of the studies which he reviewed. We quote his remarks:

> Even with this arrangement, some generalizations about the quality of the research on the nongraded school could be presented here without damaging the overall configuration of this work. First, the total number of studies in this area is discouragingly small. Proposals for educational reorganization as pervasive as nongrading must garner considerably more critical inquiries if a clear demonstration of its values is to be achieved. If the raw number of studies available is small, the accumulation of studies providing fulsome descriptions of many of the aspects of nongrading so vital a concern to the practitioner, is infinitesimal. Many of these reports are downright barren and far too often the reader is left to conjecture about the number of students involved in these studies, the brand of nongrading being evaluated, and even the exact meaning of the findings reported.

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[1] William P. McLoughlin, *The Nongraded School: A Critical Assessment.* Albany, New York: The University of the State of New York, The State Department of Education, Sept. 1967).

Other reports are so tinted by the writer's rosy hue of optimism about nongrading that the intrinsic value of the findings is indeed suspect. (pp. 43–43)

The Glenn R. Johnson Study

An extensive analysis of classroom activities in 12 nongraded classrooms in Grades 4–5–6 was made by Johnson.[2] Pupil diaries completed during 20-minute periods at the end of the morning and afternoon sessions on three consecutive days (864 diaries from 302 pupils), observations by the investigator [three 30-minute periods in each of the 12 classrooms during reading instruction, arithmetic instruction, as well as three in social studies (270 observations in all) using the Flanders Interaction Analysis technique], and guided interviews with each principal and each of the 12 teachers constituted the data-gathering procedures.

The data from the pupil diaries were summarized as follows:

1. The total number of *different* individualized activities during 3 days ranged from 118 in classroom No. 1 to 25 in classroom No. 9.
2. The total number of different *incidences of* individualized activities ranged from 430 in classroom No. 7 to 91 in classroom No. 5.
3. The percent of total time each classroom devoted to individualized instruction ranged from 86 in classroom No. 8 to 19 in classroom No. 5.
1. Percent of pupils receiving individualized instruction in arithmetic ranged from 0 (2 classrooms) to 100 (6 classrooms); in reading from 0 (1 classroom) to 100 (9 classrooms); in social studies from 0 (2 classrooms) to 100 (7 classrooms).

Among the conclusions of his study Johnson made the following statements:

1. There was considerable variation in the amount of individualized instruction among the twelve nongraded classrooms. The inference seems to be that replacing grade labels with some other designation and expressing pupil growth as continuous pupil progress does not guarantee that all pupils will receive individualized instruction.
2. There did not seem to be a consistency between the extent of individualized instruction for a specific content area and the degree of direct or indirect teacher influence revealed during observations of specific content areas.
3. During the pilot study and throughout the major investigations, the pupil diaries revealed more information than did interviews or observations.
4. The findings did not appear to support the investigator's basic assumption that disregarding grade levels and viewing the child's growth as continuous

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[2] Glenn R. Johnson, *An Investigation of the Classroom Related Activities in a Selected Number of Nongraded Elementary School Classrooms.* Teachers College, Columbia University, doctoral dissertation, 1968.

pupil progress instead of graded advancement would influence the type and incidence of classroom related activities and the climate of the classroom. The great diversity among the twelve classrooms and within individual classrooms did not seem to support the assumption.

5. If one wishes to evaluate the effectiveness of nongraded classrooms in individualizing instruction, the researcher must go beyond labels and what personnel espouse. Investigators should use instruments similar to those employed in the study to determine the degree of individualized instruction existing in nongraded schools.

THE DAYTON N. WARD STUDY

Ward's study which involved 797 first and second graders and 27 teachers in four schools in Fort Worth, Texas, and conducted over a two-year period (1966–68) paralleled the research in the Casis School in Austin, Texas, in that the same procedures and instruments were used with the exceptions of the achievement test which was the Metropolitan appropriate for first and second grades administered in April of each year and the measure of children's school anxiety.[3] The fact that Ward's study complimented the Casis School research is revealed by the similarity of the hypotheses tested. Ward's hypotheses were:

Hypothesis 1. There are important differences between experimental and control groups in teacher practices in the individualization of instruction.

Hypothesis 2. There are important differences between experimental and control groups in the distribution of teacher's instructional time.

Hypothesis 3. There are important differences between experimental and control groups in the range of difficulty and the types of instructional resources used.

Hypothesis 4. There are important differences between experimental and control groups in the way sub-groups are formed and in the number, size, composition, and achievement range in sub-groups.

Hypothesis 5. There are significant differences between experimental and control groups in children's achievement in reading and arithmetic as measured by standardized tests.

Hypothesis 6. There are significant differences between experimental and control groups in children's school anxiety as measured by draw-a-man tests rated by psychologists and an anxiety check sheet rated by teachers.

Table 48 provides a condensed summary of Ward's findings. The reader will note that his findings are predominantly the opposite of the findings in the Casis School study. As in Johnson's study, Ward found extensive differences in teaching practices among teachers in experimental as well as in control classes. Ward's report contained 501 comparisons, of which 386 were favorable to the nongraded program. Of the 108 comparisons which could be tested for statistical significance, 28 were favorable to the nongraded classes while two favored the graded classes. The measure of children's school anxiety resulted in two comparisons statistically significant for the nongraded and two for the graded classes.

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[3] Dayton N. Ward, *An Evaluation of a Nongraded School Program in Grades One and Two.* Austin, Texas: The University of Texas at Austin, doctoral dissertation, 1969.

WHAT *Does* THE RESEARCH SAY?

The bibliography at the end of Chapter 1 lists 40 studies in which an effort was made to evaluate nongradedness in the elementary school. Our monograph adds another title to the list. McLoughlin analyzed 34 of those studies and this chapter has added a digest of the Johnson and Ward research. As one endeavors to comprehend or to make a summary analysis of the findings one discovers that the findings are so mixed that no clearcut conclusion can be drawn regarding the value of nongradedness as compared to a graded program. But it seems to this writer that all of this research does tell us several things. First, teachers differ widely in how they teach and how children become involved in the instructional program; these differences prevail among teachers in nongraded as well as ingraded programs. Second, how teachers teach and how they work with children is more important than any single feature of organization. Third, the classroom practices of teachers are influenced by the scope and variety of

TABLE 48

A Summary of Comparisons Made in the Study for All Six Hypothesis

A Summary of Comparisons Made in the Study for All Six Hypotheses

					Statistical Analyses				
			All Comparison		Comparisons		Significance		
Number	Hypotheses Accepted	Rejected	Favorable to Exper.	Favorable to Control	Favorable to Exper.	Favorable to Control	Favorable to Exper.	Favorable to Control	No Sig. Diff.
I.	yes	--	73	15	19	1	10	0	10
II.	yes	--	55	13	--	--	--	--	--
III.	yes	--	108	39	--	--	--	--	--
IV.	yes	--	42	20	--	--	..4	--	--
V.	yes	--	72	0	72	0	16	0	56
VI.	yes	--	36	28	10	6	2	2	12
Totals	6	0	386	115	101	7	28	2	78

resources available to them. Fourth, if the resources are restricted one should not anticipate major advantages accruing to a nongraded program. Fifth, a nongraded program cannot be mandated; it must have teacher insights and dedication appropriate to the nongraded philosophy. Sixth, if a nongraded program is to fulfill its mission, many related facets of the internal organization of the school must be altered simultaneously.

A couple of other thoughts are worth exploring. As one reviews the numerous studies completed during the past 40 years dealing with ability grouping one ends up with the same conclusions the present writer reached about evaluating nongradedness. Passow reached the same conclusion when he wrote:

> Ability grouping is inherently neither good nor bad. It is neutral. Its value depends upon the way in which it is used. Where it is used without close examination of the specific learning needs of various pupils and without recognition that it must *follow* the demands of carefully planned variations in curriculum, grouping can be, at best, ineffective, at worst, harmful.[4]

The tendency has been to attempt to evaluate departmentalization, ability grouping, and nongradedness as single facets of school organization. In an earlier study it was demonstrated that the type of marking system used in a school, as a single facet of the program, had no demonstrable relationship to children's achievement.[5]

Perhaps the research approach to the questions raised in the above statements should have a systems orientation. An instructional program in a school is a system with the various facets of internal organization as well as teaching styles comprising subsystems. Any research effort should identify the subsystems which have impact upon the feature of organization under appraisal, the latter also being a subsystem. Each of the interacting subsystems should be described carefully and each adjusted to facilitate the best operation of the element being evaluated. In such a research approach it is not the single facet which is being evaluated but the combination of mutually supporting subsystems. If such an approach is followed more fruitful results might be obtained from research on school organization. Incidentally the above thoughts have implications for agents of change.

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[4] A. Harry Passow, "Ability Grouping; What Have We Learned?" *Administrative Leadership,* 5:4–21, Feb. 1969. Available through Department of Educational Administration, College of Education, University of Minnesota, Minneapolis, Minn.

[5] Henry J. Otto and others, *Four Methods of Reporting to Parents.* Bureau of Laboratory Schools Monograph No. 7, 1957. Copies available through the University of Texas Press, 120 W. 20th Street, Austin, Texas 78712.

WHITHER NONGRADEDNESS

Does all that has been said mean that nongradedness should be forgotten? Not at all. The philosophy underlying the nongraded school program embodies several ideas about education which educators have championed for over 40 years. If all that is implied by the nongraded concept and the systems idea mentioned above were put into practice schools would undoubtedly be better places for children. The same values, however, can be achieved whether the program officially is called graded or nongraded. Our Casis School study gives support to the latter statement. It is the only one of the reported studies in which other facets of organization such as grouping of pupils, appraising pupil progress, reporting to parents, textbook management, library usage, principal's influence, use of special teachers, and assignment of special education pupils were constant for experimental and control classes.

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